2005

Emotional competence in siblings: Influence of parent and child characteristics.

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EMOTIONAL COMPETENCE IN SIBLINGS:

INFLUENCE OF PARENT AND CHILD CHARACTERISTICS

by

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A Dissertation

Submitted to the Faculty of Graduate Studies and Research

through the Department of Psychology

in Partial Fulfillment of the Requirements for

the Degree of Doctor of Philosophy at the

University of Windsor

Windsor, Ontario, Canada

2005

ABSTRACT

This investigation provides preliminary evidence for the relative contribution of parent and child characteristics to emotional competence in siblings. A sample of 96 families with at least two children between 6 and 12 years of age participated. The participating parents completed measures of parenting attributes, child personality, and child's ability to regulate emotions for each participating child. At the same time, the children's language ability was evaluated and they were interviewed regarding their understanding of emotion. Preliminary analyses revealed that parental report of emotion regulation ability was not significantly correlated with emotion understanding scores for either younger or older siblings. A primary goal was to compare sibling's performance on measures associated with emotional competence. Consistent with previous research, siblings were similar in language ability, and differed in scores on measures of personality. Parents reported similarity in parenting attributes directed toward each sibling. Sibling scores on both measures associated with emotional competence (emotion regulation and emotion understanding) were similar. A second goal was to evaluate the contribution of parent and child characteristics to emotional competence between families. Although many of the predictor variables were correlated with emotion regulation, only three aspects of personality (i.e., agreeableness, conscientiousness, and neuroticism) made a unique contribution to the variance associated with the emotion regulation scores. Age was the only variable identified as making a unique contribution to the variance between emotion understanding scores. A third goal was to evaluate the extent to which differential familial characteristics explained variance in emotional competence. The variables that made unique contributions toward predicting differences between siblings in positive emotion regulation were parental autonomy, plus child agreeableness and

conscientiousness. Further analyses revealed that siblings who differed the most on personality variables (agreeableness or conscientiousness), and differed the most in parental autonomy accorded to them, also differed the most in emotion regulation ability. Siblings who were most similar in emotion regulation ability were also most similar in personality but were only moderately similar in autonomy accorded to them. With emotion understanding as the criterion, age was the only variable that accounted for a significant proportion of the variance.

DEDICATION

To Andrea Bachand, who reminded me of the meaning of success.

Success

To laugh often and much;

to win the respect of intelligent people

and the affection of children;

to earn the approbation of honest critics

and endure the betrayal of false friends;

to appreciate beauty; to find the best in others;

to leave the world a bit better,

whether by a healthy child,

a garden patch

or a redeemed social condition;

to know even one life has breathed easier

because you have lived.

This is to have succeeded.

Bessie Anderson Stanley (b. 1879)

written 1905, Modern Women

ACKNOWLEDGEMENTS

First, I would like to thank Dr. Sylvia Voelker, I am indebted to her for agreeing to supervise this project. She was invariant in her encouragement and support. In addition to her incisive attention to detail, she encouraged me to see beyond the current project. I particularly appreciated her pithy comments that reduced a topic to its simplest terms. She inspired me, while simultaneously helping me to not take myself so seriously. I would also like to acknowledge the generous support and encouragement of my committee, Dr. Julie Hakim-Larson, Dr. Cory Saunders, and Dr. Sharon McMahon. They were unflinching in their efforts to elevate the caliber of this research, and I am grateful. I am indebted to the families that generously volunteered their time and participated in this study. I am especially appreciative of the children who enthusiastically welcomed me and willingly answered all my questions. They reminded me daily of the purpose of my labours. Thanks to Kendall Soucie and Jacqueline Rynard for assistance with data collection. Thanks also to Sherry Bergeron for asking without fail about my progress, and for always appearing interested when I answered her in excruciating detail; I profited greatly from our discussions. I am also grateful that she was willing to share her appreciation for statistics and her keen, inquiring mind. Thanks to Michael Mills for enduring and surviving this process with me. It is to his credit that he still engages in conversation with me.

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CHAPTER I

INTRODUCTION

Although siblings share both genetic material inherited from their parents and a common rearing environment, siblings can be surprisingly dissimilar. Siblings are frequently portrayed in the popular culture as being vastly different, and the differences observed vary across developmental domains. In classic children's books (e.g., Little Women), television shows (e.g., Malcolm in the Middle), and movies (e.g., America's Sweethearts or Twins), sibling differences are highlighted and often form the basis of the plot. Empirical evidence reflects the normative belief that siblings differ along many dimensions (e.g., intellectual, musical, or athletic ability), including their capacity for emotional competence (Ahern, Johnson, Wilson, McLearn, & Vandenberg, 1982; Brody, Stoneman, & McCoy, 1992; Downey, 2001; Dunn, Stocker, & Plomin, 1990; Plomin, & Daniels, 1987; Saudino, Wertz, Gagne, & Chawla, 2003).

Researchers have investigated many different aspects of emotional development. For example, the interface of emotion and other human systems has been examined, such as cognition (e.g., Ackerman & Izard, 2004; Denham & Kochanoff, 2002; Izard, 1971; Izard, Fine, Schultz, Mostow, Ackerman, & Youngstrom, 2001), social interactions (Halberstadt, Denham, & Dunsmore, 2001; Saarni, 1993), and the biological underpinnings of emotion (Marshall, Fox, & Henderson, 2000; Porges, 1991; Stifter & Fox, 1990). The field has also seen changes in how some constructs are defined. For example, emotional intelligence was originally conceived of as a subset of social intelligence, but now the definition has expanded to include expressing, perceiving, understanding, reasoning about, and regulating emotion (Mayer, Salovey & Caruso, 2000; Salovey & Mayer, 1990). In some instances, maladaptive emotional development has been

investigated (e.g., alexithymia, emotion dysregulation) whereas in others normative development is studied (Denham, 1998; Gottman, Katz, & Hooven, 1996; Sifneos, 1991; Shields & Cicchetti, 1998). Researchers have studied specific aspects of emotional development, such as emotion regulation or emotional expressiveness (During & McMahon, 1991; Kopp, 1989; Malatesta, Culver, Tesman, & Shepard, 1989; Shields & Cicchetti, 2001; Thompson, 1994). Recently, efforts have been made to integrate and consolidate various aspects of emotional development into composite measures, and comparisons have been made between the composite measures (Buckley, Storino, & Saarni, 2003; Fukunishi, Wise, Sheridan, Shimai, Otake, Utsuki et al., 2001; Lundh & Simonsson-Sarnecki, 2001; Zeidner, Matthews, Roberts, & Mac Cann, 2003). Most definitions of emotional competence include both cognitive appreciation of emotions (i.e., understanding the cause, consequence, and expression of emotion) and behavioural manifestation of competence (i.e., emotion regulation) (Eisenberg, Cumberland, & Spinrad, 1998; Saarni, 1999; Shipman, Zeman, Penza, & Champion, 2000)

Over the last decade, there has been increased interest in the development of emotional competence (Ackerman, Abe, & Izard, 1998; Denham, 1998; Halberstadt et al., 2001). The current investigation considers factors that contribute to the development of emotional competence. A review of the emotional competence research literature suggests that the term emotional competence is meant to encompass many aspects of emotional development. Emotional competence is generally conceptualized as a collection of skills or abilities, and there have been a number of attempts to identify the parameters of emotional competence (Saarni, 1999). Although emotional competence is often conceptualized as a collection of skills or abilities, it is expected that the skills are interdependent (Denham, 1998). Abilities that have been suggested as

contributing to emotional competence include the ability to label emotions, knowledge of emotion coping skills, the ability to represent emotion concepts nonverbally (including pragmatics), and the ability to sympathize and empathize with others (Ackerman et al., 1998; Denham & Kochanoff, 2002; Saarni, 1993; Saarni, Mumme, & Campos, 1998). Eisenberg and colleagues emphasize that emotional competence includes the ability to understand emotions in the self and others, display emotions appropriately, and regulate emotions and emotion related behaviours (Eisenberg et al., 1998). Most definitions of emotional competence include an understanding of emotions (i.e., cause, consequence, and expression) and emotion regulation (Ackerman et al., 1998; Denham, 1998; Eisenberg et al., 1998; Saarni et al., 1998).

Recently, there has been much research directed toward identifying the factors that contribute to individual differences in emotional competence. Some researchers have emphasized the role of intra-personal individual factors (i.e., trauma, temperament) and others have emphasized the role of inter-personal familial factors (i.e., parenting) in emotional development (Bradley, 2000; Denham, Blair, DeMulder, Levitas, Sawyer, Auerbach-Major, & Queenan, 2003; Eisenberg, Fabes, & Murphy, 1996; Gallagher, 2002; Hooven, Gottman, & Katz, 1995; Saarni, 1990; Tucker, McHale, & Crouter, 2003; Rutter, 2003). This research has led to greater understanding of the factors that contribute to the development of emotionally competent functioning. Some of the most fruitful recent advances, in teasing apart the influence of inter- and intra-individual factors in emotional development, have come from research that involves the study of siblings (Begue, & Roche, 2005; Boyle, Jenkins, Georgiades, Cairney, Duku, & Racine, 2004; Caspi, Roberts, & Shiner, 2005; Pike, 2002).

A wealth of research has demonstrated that a failure to adequately develop the skills

associated with emotional competence results in adverse effects in both childhood and adulthood (Biederman, Rosenbaum, Hirshfeld, Faraone, Bolduc, Gersten, et al., 1990; Bohnert, Crnic, & Lim, 2003; Buckley et al., 2003; Cole, Michel & Teti, 1994; Dix, 1991; Eisenberg, Fabes, Guthrie, & Reiser, 2000; Harrington, Fudge, Rutter, & Pickles, 1990; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996; Saarni, 1993). If children are slow to master, or fail to master, the skills associated with emotional competence then they are at increased risk for negative developmental outcomes such as impaired peer relationships, diminished academic performance, and increased risk for psychopathology (Denham, Blair, Schmidt, & DeMulder, 2002; Shields, Dickstein, Seifer, Giusti, Magee, & Spritz, 2001). The relationship between a child's affective and social development has been described as inseparable (Saarni, 1999). A child's social competence will be judged, at least in part, on the child's affective ability to regulate both emotion and the behaviour associated with the emotional arousal, and children who lack age-appropriate emotional competence risk rejection by peers (Ashiabi, 2000; Blair, Denham, Kochanoff, & Whipple, 2004; Eisenberg and Zhou, 2000; Eisenberg et al., 2000; Fabes & Eiesenberg, 1992; Mahady, Wilton, Craig, & Pepler, 2000). There is evidence that children who have appropriate rules for expressing emotions, are able to demonstrate emotion understanding, and are better able than peers to cope adaptively with their emotions, tend to also have an advantage in adjustment to school and academic performance (Gottman, Katz, & Hooven, 1997; Shields et al., 2001). A number of researchers have identified failure to adequately master the skills associated with emotional competence as a critical factor in the development of psychopathology in both children and adults (Bradley, 2000; Hagekull & Bohlin, 2004; Shields & Cicchetti, 1998; Suveg & Zeman, 2004; Walcott & Landau, 2004). Measures of emotional competence correlate strongly with measures

of psychopathology, and may moderate, mediate, or may result from processes associated with psychopathology (Ciarrochi, Scott, Deane, & Heaven, 2003; Saarni, 1999; Zeman, Shipman, & Suveg, 2002). Given the maladaptive outcomes associated with deficits in the skills associated with emotional competence, it is of utmost importance to further investigate the factors associated with the development of emotional competence.

In spite of much research that has identified and evaluated the factors that contribute to the development of emotional competence, the reasons why children from the same family may, despite seemingly adequate parenting and absence of trauma or abuse, have disparate emotional competencies have not yet been explicated. In order to determine what factors contribute to differential sibling development, investigators must study more than one child per family (Dunn & Plomin, 1990). To date, limited research has been conducted evaluating the degree to which siblings differ on measures of emotional competence, nor the factors that contribute to sibling similarities or differences. Traditionally, it was assumed that siblings were exposed to similar environmental influences (i.e., socioeconomic status, child-rearing attitudes, parental characteristics), therefore the between-family approach was taken when studying individual-environment relationships (Daniels & Plomin, 1985). This approach may stem from the normative belief that parents should rear children in a similar manner. However, research consistently shows that nonshared environmental factors account for a substantial amount of the variance in measures of parent-child relationships and in child personality (Pike & Plomin, 1997; Plomin & Daniels, 1987). For example, within-family variance accounts for approximately 30% to 50% of environmental variance in cognitive ability (Daniels & Plomin, 1985). Overall, it is estimated that there is approximately 40% differential sibling environmental variance. In the past, it was assumed

that the differences between individuals that matter are the differences that occur between families. More recently, consideration has been given to the idea that the environmental factors that influence development operate on an individual rather than familial basis (Dunn & Plomin, 1990).

Previous investigations have identified a number of factors that account for individual differences in emotional competence. These investigations have failed to consider the relative contribution of various factors influencing the development of emotional competence and the nature of the relationship between differential sibling competencies and both intra-personal and inter-personal factors. One model that may account for the contribution of both intra-personal and interpersonal factors in the development of emotional competence, and differential sibling competencies, is the goodness-of-fit model. This model purports that children adapt best when there is a match between the child's attributes and the demands of the environment (Thomas & Chess, 1977). More recently, Carey and McDevitt (1995) have provided suggestions on how to adapt children's inborn behavioural styles. In terms of parent-child interactions, the Thomas and Chess (1977) model recognizes that both parents and children have the capacity to respond differentially to a wide range of situations. Goodness of fit between parent and child will be more predictive of a favourable outcome. This approach to exploring the development of emotional competence posits that a child's capacity for emotional competence results from a dynamic interaction between both the child's innate biological characteristics and experiential factors unique to the child. Thus, the child's developing emotional competence depends on interactions between factors such as temperament, the responsiveness of caregivers, experience of trauma, abuse, or loss, brain dysfunction, and intellectual capacity. This approach is consistent with the

notion that children within the same family will likely experience unique contexts for emotional competence development, making sibling differences in emotional competence levels more likely.

The guiding principles of developmental psychopathology provided the framework for design of the present investigation into sibling differences in emotional competence (Cicchetti, 1989; Rutter & Garmezy, 1983). Specifically, this research is informed by consideration of the integration of the study of developmental processes with the study of individual differences. The research investigated individual differences in emotional competence that may distinguish adaptive from maladaptive functioning and evaluated factors that are associated with differential developmental trajectories (Cole et al., 1994). More specifically, this investigation acknowledges that optimal emotional competence likely results from the relative contribution of a number of factors (i.e., multideterminism) and these factors likely produce different effects depending on the relative contribution of each factor (i.e., interactionism). Thus, this investigation used within-family methodology to explore factors that contribute to deviations from normal development of emotional competence.

In sum, the primary focus of this study was to elucidate the relationship between factors contributing to differential emotional competence in siblings. First, evidence for specific differences in sibling abilities and characteristics is reviewed. Potential causes for differences between siblings is examined, and evidence that parental differential treatment of siblings contributes to differential sibling outcomes is reviewed. Next, the research literature addressing factors thought to influence the development of emotional competence is discussed. The factors that are addressed include age, temperament or personality, cognitive processes, language skills, gender, and familial or environmental factors. In addition, evidence for the nature of the

relationship between factors that contribute to emotional competence is explored. The discussion also considers evidence that, not only do parental attributes influence child characteristics, but that the socialization process is bidirectional in that child characteristics may elicit particular environmental responses. Finally, an explanation for why children from the same family, despite absence of trauma or abuse, can demonstrate differential emotional competence is proposed.

Differential Sibling Emotional Competence

The first topic to be considered is how siblings, who share both genes and rearing environment, may differ in emotional competence. Before considering evidence that parental differential treatment of siblings contributes to differential sibling outcomes, specific differences in sibling abilities and characteristics will be reviewed. Finally, potential causes for differential parental treatment will be examined.

Sibling differences. The available evidence suggests that siblings differ more than might be expected across multiple domains. For example, although siblings share approximately 50% of the same genes, there is low resemblance on responses to personality questionnaires (i.e., range from $r = .10$ to .30), with adoptive sibling correlations close to zero (Daniels, 1986). Similarly, adolescent and young adult sibling pairs show little resemblance with respect to temperament traits, with the exception of a resemblance for brother pairs on the emotionality - distress dimension. A review of the research in sibling temperament (from infancy to adolescence) revealed that siblings tended to be described by parents as dissimilar, and correlations were near-zero or negative (Saudino, 2003). Some parents described their children as being no more alike than unrelated pairs. Siblings show only moderate resemblance in cognitive capacity, with adult siblings differing more than children (Dunn & Plomin, 1990). There are also only moderate

similarities on measures of vocabulary and verbal fluency. Adult siblings are no more likely than unrelated persons to become depressed in reaction to life events (Dunn & Plomin, 1990). Overall, siblings tend to be less similar than one would expect, given their genetic relationship, across a number of domains, including some domains that have been linked to the development of emotional competence.

Cause of Sibling Differences. Given that siblings differ across some domains, what could account for the differences between siblings? When evaluating the cause of sibling differences, one must consider both common and unique genetic and environmental contributions (Goldsmith, Lemery, Aksan, & Buss, 2000). Siblings have both shared (or common) and non-shared (or unique) genetics and experiences (Plomin & Daniels, 1987). The genetics and environment that siblings have in common are obviously not the source of sibling differences (Dunn & Plomin, 1990). Further, if siblings are different, and genetic factors account for only a small proportion of the difference, then the environment must be primarily responsible. For the purpose of argument, environment will refer to any non-hereditary influence. Thus, the environmental differences between siblings could include psychosocial environment (e.g., peers), illness, nutrition, relationship with parents, nature of sibling interaction, or differences in parental treatment (Dunn & Plomin, 1990; Mann, 1993). Alternatively, sibling differences could be due to an interaction between genetics and environment. It is possible that the same environment may have a differential effect on siblings due to differences in sibling temperament or reactivity to the environment (Dunn & Plomin, 1990; Rothbart & Ahadi, 1994; Wachs, 1987). Alternatively, individual differences may mediate the influence of the environment (Dunn & Plomin, 1990). For example, a forceful mother who is parenting one inhibited child and one uninhibited child is likely

to increase the differences between the children if she parents the two children in the same way. Recent research suggests that sibling differences may be exaggerated when based on parent ratings (Saudino, Wertz, Gagne, & Chawla, 2003). Parents tended to rate siblings as less alike on temperament dimensions than when the siblings were rated using objective measures. It was suggested that, when rating their children, parents contrast the child being rated with other children with whom the parent is familiar.

There has been much research evaluating the influence of family constellation variables (i.e., birth order, socio-economic status, gender) on sibling differences. Overall, the influence of family constellation variables has been negligible on individual differences in behavioural traits (i.e., accounting for less than 10% of intersibling variance) and absent for personality differences (Mann, 1993; Neale, 1999). Birth order and gender are weakly associated with behavioural differences, but if socioeconomic status is controlled, birth order and behaviour relationships are minimal in sibling pairs (Dunn, 1983; Ernst & Angst, 1983). Much of the research that identified effects of birth order on differential parental treatment was conducted with children younger than school-age (i.e., infants or pre-schoolers) (Furman & Lanthier, 2002). One study comparing adolescent and young adult siblings on dimensions of differential experience found that neither birth order nor age was related to differences in relative scores on a scale of parental treatment (Daniels & Plomin, 1985). Additionally, gender, birth order, and age accounted for no more than 10 % of the variance in differential sibling experience. Birth spacing, family size, and parental education were not related to differential sibling experience. More recent research did find birth order effects, but also found that first-borns were more supervised than middle-borns (Begue & Roche, 2005). When the number of children in the family and parental supervision effects were

controlled statistically, the effect of birth order disappeared. Thus, the finding of differences between siblings due to birth order appears related to differential parental treatment. However, competing hypotheses have not been assessed.

Differential Parental Treatment of Siblings. Despite a widely held assumption that parents should treat siblings equally, there is evidence from both children and parents that parents treat siblings differently. The number of children that perceive differential treatment by their parents depends on the age of the siblings when interviewed. When adolescent siblings were polled, 40% perceived differential treatment by their parents, whereas when the sample included adolescents and children in middle childhood about one-third perceived differential treatment (Daniels & Plomin, 1985; Kowal & Kramer, 1997). Both groups were interviewed regarding their perception of differential parental control and affection. When mothers were polled, the majority of mothers reported differences in their treatment of their adolescents and children (i.e., 30% reported "some" difference, 35% reported "marked" difference) (Dunn et al., 1990; McGuire, Dunn, & Plomin, 1995). This finding was validated by observer ratings of the same families, which indicated that the mothers were quite different in the affection and control directed toward their children (Dunn et al., 1990). Other research examined patterns of differential treatment within families, and found that about half of families reported the same pattern of differential treatment (e.g., favouring the first-born) (McHale, Crouter, McGuire, & Updegraff, 1995). As well, stability has been found in parental report of differential treatment across two measurement occasions (Feinberg & Hetherington, 2001; McGuire et al., 1995). Thus, differential parental treatment has been identified by child and parent self-report, and by independent observation of family interactions.

A number of different child outcomes have been linked with differential parental treatment. One study evaluated the consequences associated with differential maternal treatment of siblings (i.e., discipline) (McGuire et al., 1995). The sibling that received less attention and more discipline at 7 years of age was identified by teacher report as exhibiting more externalizing problems at 11 years of age. In another study, lack of maternal affection was linked to increased internalizing problems, and greater maternal control was linked to both internalizing and externalizing problems (Dunn et al., 1990). Adolescents who reported experiencing more maternal closeness, more say in family decisions, more sibling friendliness, and more parental chore expectations than their siblings, were found to have better psychological adjustment (Daniels, Dunn, Furstenberg, & Plomin, 1985). Another study found decreased self-competence and self-worth in children whose mothers reported showing their sibling relatively more affection (Dunn & Plomin, 1990). In another study, identical twins' reports of parental differential treatment have been linked to differences in depressive symptoms (Dunn & Plomin, 1990). Overall, differential parenting of siblings contributed unique variance in the children's later adjustment (Feinberg & Hetherington, 2001). Differential maternal behaviour accounted for 34% of the variance of internalizing disorders and 27% of the variance in externalizing disorders (Dunn et al., 1990). In other research, differential maternal parenting behaviour was associated with children's emotional-behavioural problems, but the outcome was dependant on the type of maternal behaviour assessed, and only explained between 1 and 10% of the variance in children's outcome (Boyle et al., 2004). Developmentally, it is possible that differential treatment is particularly salient in middle childhood because of the emerging importance of social comparison processes (McGuire et al., 1995).

Potential Causes of Differential Parental Treatment of Siblings.

It has been well-established that parents tend to treat siblings differently, and that differential parental treatment may result in adverse outcomes for children. There are a number of theories as to the cause of parental differential treatment. Research has found that stressful family environments are more likely to be associated with differential parenting (Jenkins, Rasbash, & O'Connor, 2003). There may be other family dynamics that contribute to differentiation between siblings, such as developmental differences. Parents may treat older children differently from younger due to differing developmental needs or demands (Maccoby, 1984). A number of studies have demonstrated that differential treatment is related to child characteristics, including gender mix of the sibling pair, age, birth order, temperament (Brody et al., 1992; Saudino et al, 2003; Sorbring, Rodholm-Funnemark, & Palmerus, 2003; Tamrouti-Makkink, Dubas, Gerris, & van Aken, 2004; Tucker et al., 2003). It is possible that genetic mediation of nonshared environment contributes to a perception of sibling differential treatment (Caspi, 1998; Feinberg, Neiderhiser, Howe, & Hetherington, 2001). Specifically, siblings may interpret particular experiences in a style that is consistent with their personality characteristics, thus leading to a perception of differences in parental treatment. If so, this premise would be supported by the finding that children tend to emphasize differences in the environment whereas parents emphasize similarities in parental treatment (Feinberg et al., 2001).

Another possible explanation for findings of parental differential treatment of siblings may be that sibling differences elicit rather than cause differential treatment (McGuire et al., 1995; Stoneman & Brody, 1993). Thus, in some instances, it may not be the differential treatment that is associated with later differences in adjustment, but rather the characteristics associated with the

elicitation of different treatment that may be associated with later differences in adjustment.

Factors Associated with the Development of Emotional Competence

There are a number of factors, both within and outside the child, that have been linked with the development of emotional competence. These factors include the child's temperament or personality, cognitive processes, language skills, gender, and familial or environmental influences. Further, each of these factors has a developmental component such that there are age-related changes in the factors that influence the development of emotional competence.

Temperament / Personality. One factor strongly associated with the development of emotional competence is temperament or personality. Most definitions acknowledge that temperament is conceptualized as being biologically based (i.e., influenced by genetic inheritance), as including multiple dimensions (e.g., arousal, attention, emotionality, self-regulation), and as reflecting consistent individual differences across contexts (Campos, Campos, & Barrett, 1989; Goldsmith et al., 2000; Oatley & Jenkins, 1996; Rothbart & Bates, 1998). The definition held by most researchers is that temperament describes "stable, biologically based affect/behavior profiles that appear early in life" (Kagan, 1992, p.100). It is also generally accepted that temperament influences the individual's interaction with his/her environment by predisposing the individual to particular reactions (Hartup & van Lieshout, 1995; Rothbart & Bates, 1998; van den Boom & Hoeksma, 1994).

Currently, there is sufficient evidence to assert that temperament, as measured in preschoolers, has a heritable component (DiLalla & Jones, 2000). There is also evidence to support the assertion that temperament has a biological basis, in that inhibited/uninhibited children differ in the reactivity of the sympathetic nervous system (i.e., heart rate, blood pressure, pupil

dilation, muscle tension, salivary cortisol) under certain conditions (Kagan, 1992). Further evidence that temperament has a heritable, biological basis is found in the link between temperament and vagal tone. Individual differences in vagal tone have been associated with individual differences in temperament, and vagal tone appears to be related to some aspects of temperament. Specifically, a comparison of inhibited and uninhibited children revealed differences in measures associated with the autonomic nervous system (i.e., heart rate, salivary cortisol, urinary epinephrine levels), and also demonstrated that children who are behaviourally inhibited in social settings tend to have lower heart rate variability and higher resting heart rate (Kagan, Reznick, & Snidman, 1987). However, although there is an association between vagal tone and temperament, it appears that vagal tone is a measure limited to the individual's physiological response whereas temperament includes the individual's behavioural response. Further, the research literature has not yet elucidated the relationship between temperament and measures of aspects of temperament such as vagal tone.

Temperament is considered by many to be the basis or starting point from which the adult personality emerges, although the specific developmental pathway is not well understood (Goldsmith et al., 2000; Hartup & van Lieshout, 1995; Rothbart & Bates, 1998). Personality is thought to reflect the interaction between temperament and specific individual experiences, and has been referred to as "social and cognitive elaborations" (Rutter, 1987, p.444) of temperament (Ahadi & Rothbart, 1994; Hartup & van Lieshout, 1995). Generally, there is a tendency in the literature for investigators to refer to temperament when conducting research with infants and preschoolers (i.e., less than age 6) and personality when conducting research with adolescents and adults (i.e., more than age 15), with little attention to children in middle childhood. Infrequently

there is reference to children's personality and adult temperament but, until recently, there has been little clarification as to the ages at which temperament and personality are most salient.

A recent critical review of temperament and personality constructs in middle childhood has suggested that temperament is transformed into personality, and is well-established, by middle childhood (Shiner, 1998). Between preschool and middle childhood there is a well-documented developmental shift in cognitive, emotional and social abilities, along with shifts in self-understanding and social responsibilities. Shiner hypothesizes that the developmental transition between preschool and middle childhood supports an accompanying transition from temperament to personality. Thus, prior to school entry, the most salient descriptor of individual differences would be temperament, but after the child is of school age, the most salient descriptor is personality.

There continues to be considerable debate over the most valid dimensions of temperament and personality (see Block, 1995a; Block, 1995b; Costa & McCrae, 1995; Goldberg & Saucier, 1995). Some effort has been directed toward identifying the developmental relationship between particular temperament and personality characteristics. For example, Rothbart (1989) demonstrated the relationship between the temperament dimensions of reactivity and arousability, and the personality dimension of introversion-extraversion. Further, the most valid dimensions of temperament or personality differ by developmental status. For example, individual differences in activity level are evident very early in life but, overall, adults are less motorically active than children, suggesting that activity level is a less meaningful descriptor as the individual ages (Eaton, 1994). Developmentally, certain personality constructs (e.g., aggression) cannot be measured prior to particular ages (e.g., infancy or toddlerhood) because the child does not have

the motor, language, and cognitive capacity to demonstrate certain personality constructs. For children over age six, the most differentiated list of personality dimensions has been identified as: (a) positive affect, (b) activity level, (a and b combined = positive emotionality / approach / extraversion), (c) fearful distress, (d) irritable distress (c and d combined = general negative emotionality / neuroticism), (e) effortful control / task persistence / conscientiousness, (f) agreeableness / aggression / adaptability (Caspi et al., 2005; Rothbart & Bates, 1998; Shiner, 1998).

Individual differences in emotion reactivity or intensity of emotional experience is a significant aspect of personality in middle childhood. Emotional competence is comprised of individual differences in an awareness or understanding of aspects of emotionality. Thus, temperament, or personality, and emotional competence are intertwined (Walden & Smith, 1997). From birth, infants differ in the ability to restore homeostasis after an emotional event, as a function of the intensity of the event and the infant's regulatory capacity (Rothbart & Derryberry, 1981). It has been proposed that emotional competence is related to temperament in that some children are born with a biological preparedness (i.e., temperament) to experience certain emotions (e.g., fear) more easily or intensely than others (Kagan, 1994). Further, other temperament- and personality-related processes, such as the ability to shift and refocus attention, are needed for emotional competence (Rothbart, Derryberry, & Hershey, 2000). However, it is important to note that emotional competence may be differentiated from extremes of temperament or personality (Walden & Smith, 1997). For example, behavioural inhibition is differentiated from anxiety disorders, as is high activity from ADHD. Thus, although personality includes specific aspects of emotion, the construct of emotional competence may be influenced by personality but

is unlikely to be determined by personality.

In sum, a child's temperament or personality is associated with the development of emotional competence in that the constructs of temperament or personality include individual differences in emotion reactivity or intensity of emotional experience. Although there is evidence that temperament is biologically based, temperament is differentiated from physiological constructs such as vagal tone in that temperament also includes the individual's behaviours. Developmentally, there is evidence that the dimensions of temperament are transformed into personality dimensions by the developmental shift in cognitive, emotional and social abilities, along with shifts in self-understanding and social responsibilities that occur in the transition between preschool and middle childhood.

Cognitive processes. Individual differences in cognitive abilities are related to individual differences in emotional competence. There are a number of avenues by which cognitive abilities are associated with emotional competence. Generally, individuals differ in how they attend to, encode, and process information or environmental cues, including emotion-eliciting information, and also differ in propensity for certain cognitive processes (Crick & Dodge, 1994; Larsen, 2000). Emotions may activate certain cognitive processes, such as attention or decision processes, and can facilitate or disrupt cognitive appraisal of events (Dix, 1991). Specifically, children's individual differences in cognitive processing of emotion-related material may result in a bias in terms of how that material is remembered or processed (Rothbart & Bates, 1998). Further, cognitive and emotional processes often co-occur, and cognition may either precede or follow emotion (Denham, 1998).

The specific cognitive processes that are particularly salient to children's capacity for

emotional competence include the ability to conceptualize or understand the meaning of emotion, cognitive strategies, self-evaluation or introspection, self-esteem or self-efficacy, and visuospatial ability. Specifically, the ability to conceptualize emotions (i.e., ability to represent emotions mentally), both within self and others, contributes to an understanding of how emotions function, augments the ability to monitor emotion experience and behaviour, and also influences beliefs and expectations (Ackerman et al., 1998; Oatley & Jenkins, 1996; Thompson, 1991). Emotion understanding also contributes to the development of cognitive strategies for emotion management (Thompson, 1991). Cognitive strategies inform the child as to how and when to express emotions in different contexts (e.g., toward parents versus peers) (Gottman et al., 1996). Certain emotions (e.g., guilt, shame) require the ability to self-reflect or evaluate one's emotional experience (Cole et al., 1994). The ability to self-reflect on behaviour, thoughts and emotions is also required to guide present and future efforts to manage or regulate emotions (Bradley, 2000; Cole et al., 1994; Thompson, 1991). The child's self-esteem or self-efficacy will influence the selection of emotion regulation strategies or emotion-oriented behaviour (Bradley 2000). Finally, children require visuo-spatial skills to accurately perceive emotion in others (Cole et al., 1994). Children with behavioural problems often have difficulties in misreading interpersonal situations, and children with visuo-spatial deficits are more likely to have emotional disturbances (Cole et al., 1994; Petti, Voelker, Shore, & Hayman-Abello, 2003; Rourke, 1989). Recently it has been argued that there are direct links between emotionality and the development of cognitive functioning (Blair, 2002). Specifically, factors that influence children's emotionality also influence neurological interconnectedness within the brain between emotion centers and cognition centers.

Developmentally, age-related changes in children's cognitive capacity are related to

changes in emotional competence. Children's emotion understanding (i.e., cognitive attribution and appraisal of cause and consequence of emotions) improves significantly through preschool until kindergarten and first grade (Ackerman et al., 1998). There appears to be a developmental change that occurs around the transition to kindergarten, such that children who have entered school exhibit greater facility with emotional complexity and are more likely to understand the causes and consequences of emotions (Denham, 1998). This developmental change may be related to expanding social relationships (i.e., to include peers), and increased need for interpersonal emotional competence along with greater opportunity to practice skills associated with emotional competence. Most children become aware of personal characteristics both in themselves and others, and the evaluation of those characteristics, by six years of age (Kagan, 1994).

Other differences between preschoolers and school-agers include the strategies associated with management of emotional experiences. In middle childhood, children begin to understand that emotion is related to cognitive factors and so are more likely to utilize mental strategies for changing emotions, whereas younger children are more likely to try to change the situation (Brenner & Salovey, 1997; Saarni, 1993). Younger children have greater reliance on socially interactive strategies (i.e., social support) to regulate emotion whereas older children rely more on internal strategies for coping with emotional experience, likely related to an ability for introspection (Brenner & Salovey, 1997; Meerum Terwogt & Olthof, 1989; Saarni et al., 1998). The cognitive gains associated with middle childhood include understanding of the cause/antecedents or associations between situations and emotional reactions, and learning about the consequences of emotional responses (Meerum Terwogt & Olthof, 1989). Increasingly, self-

monitoring exerts influence over emotional responding and emotion management capacity (Denham, 1998). Finally, there are significant age differences in strategies utilized for coping with emotions (Rossman, 1992). The use of coping strategies focused on emotions (e.g., invoking relaxation strategies when feeling anxious) increases with age.

In sum, individual differences in cognitive abilities are related to personal differences in emotional competence, based both on individual propensity for particular cognitive processes and on differences in the relative influence of emotion on cognitive processes. For children, the cognitive processes that are particularly salient include the ability to conceptualize emotion, cognitive strategies for emotion management, ability to self-reflect on emotion processes, self-efficacy as regards emotion processes, and the ability to read emotions in others. There are significant age differences in the cognitive abilities associated with emotional competence, such that older children tend to exhibit greater facility with these cognitive processes, and there appears to be a developmental shift in these cognitive processes between preschool and middle childhood. Much research has shown that impaired cognitive processes negatively influence the development of emotional competence. However, research has failed to provide evidence that, beyond a moderate level of cognitive competence, enrichment in these cognitive processes is related to improved emotional competence, likely because most research excludes participants with known language or learning difficulties and then fails to include cognitive competence in further analyses (Bohnert et al., 2003).

Language skills. Children's receptive and expressive language skills influence the development of emotional competence in a number of ways. First, it is presumed that the verbal expression of feelings is associated with more control or better regulation of nonverbal expression

of emotion (Cole et al., 1994). For example, parents encourage preschoolers to "use your words" when distressed rather than to physically express how they feel. Indeed, children with language deficits are more likely to have emotional disturbances than are children with average to above average language skills (Rourke, 1989). Language mediates parent-child interactions and alters parental management of children's emotional experience because it allows for discussion of emotion (Bradley, 2000; Thompson, 1991). Parents can direct regulatory processes through verbal instruction (e.g., tell the child to "calm down"), can influence management through information provided to the child (e.g., tell the child what to expect in a potentially fear-inducing situation), and explain explicitly how to manage emotional situations (e.g., provide strategies such as encouraging external distraction). Children also learn from overheard discussion about others' emotional experiences (e.g., if child overhears parents argue) (Thompson, 1991). Language facility makes it possible for children to reflect consciously about emotion, and to ask for and express affection (i.e., obtain comfort), enables children to communicate the experience of both negative and positive emotion to get their needs met (i.e., share feelings), and allows children to discuss the cause of their emotion states (Dunn & Brown, 1991; Thompson, 1991). For both parents and children, emotion language can also lead to greater intimacy in relationships (Dunn & Brown, 1991).

Empirical evidence supports the notion that a capacity for emotion language is associated with emotional competence. For example, toddlers who can communicate emotions through words or can use words to negotiate, refuse to follow instructions, or change the topic being discussed, are less distressed during frustration-inducing situations (Kopp, 1992). In a sample of children referred to a mental health center, there was a relationship between referral status and

receptive language disorders, such that referred children were far more likely to have a language disorder than would be expected from population studies (Cohen, Barwick, Horodezky, & Isaacson, 1996). Also, parents contribute to children's increasing ability for emotion language. The average number of conversations about emotions when children are three-years-old is 8.4 per hour (range from 2 to 25) (Dunn, Brown, & Beardsall, 1991). And the more the children talk about emotions at age three, the more skilled they are at making judgements about emotions displayed by adults at age 6. However, simply discussing emotions may not be sufficient to foster emotional competence. It is likely that children whose parents use emotion language to modify inappropriate behaviour do not acquire the same facility with emotion as do children whose parents use emotion language to teach their children about emotions (Eisenberg et al., 1998).

Developmentally, the ability for emotion language parallels general language ability (Dunn, Bretherton, & Munn, 1987). Thus, toddler's knowledge of emotion words increases significantly between 18 and 30 months, and by 30 months of age toddlers can label their own emotions, comment on their own emotions, and use emotions as a guide for their behaviour (Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986). By 3 to 4 years of age, children have sophisticated emotion language ability, with developmental normative differences in what sort of emotion is experienced in different situations (Saarni, 1993). Decreases in displays of anger and corresponding increases in verbal aggression in the third year of life are likely due to children's greater ability to talk about their emotions (Dunn & Brown, 1991). Although there are significant advances in emotion language skills during the preschool years, there are still significant individual differences in middle childhood in the expression of emotions used in social interactions (Dunn & Brown, 1991). Although it is accepted that both age and language contribute to emotion

understanding, a recent study found that language is a slightly better predictor of ability than is age (Pons, Lawson, Harris, & de Rosnay, 2003).

In summary, both receptive and expressive language skills influence the development of children's emotional competence in a number of ways. Language mediates parent-child interactions and contributes to children's ability to reflect on and express their internal states to others. There are significant age differences in the language skills associated with emotional competence, such that children in middle childhood tend to exhibit greater facility with emotion language than preschoolers. As with cognitive processes, most research provides no evidence that, beyond a moderate level of linguistic competence, enrichment in language skills is related to improved emotional competence, likely because most research excludes participants with known language or learning difficulties and then fails to include language skills in the analyses (Bohnert et al., 2003). This may be because the relationship between language and emotional competence is not the focus of the research.

Gender. Gender is one aspect of individual differences which has been inconsistently associated with emotional competence, and has been described as contributing little variance to the various aspects of emotional functioning (Brody, 1996). No gender differences have been found for preschool children on measures of emotion understanding, in knowledge or understanding of emotional processes, and in recognition accuracy of facial and vocal expressions of emotions (Leppanen & Hietanen, 2001; Saarni, 1995 as cited in Saarni et al., 1998; Shields et al., 2001). Boys and girls in middle childhood and early adolescence do not differ in their ability to decode facial expressions (Lenti, Lenti-Boero, & Giacobbe, 1999). Further, Gottman and colleagues (1996) found no gender differences for children in middle childhood on outcome

measures associated with emotional competence. However, gender differences have been identified in strategies used for coping with emotion, such that girls use more internalizing strategies (e.g., emotion-focused) whereas boys use more externalizing strategies (e.g., exercise or expression of emotion) (Saarni, 1995 as cited in Saarni et al., 1998) Also, when boys and girls were asked to provide strategies for coping with aversive feelings there were few gender differences, but boys gave more elaborate answers for coping with anger when compared to girls (Saarni, 1997).

Although there are few gender differences on measures associated with emotional competence, there are gender differences in how adults rate children's emotion-related abilities. For example, parents rate boys' and girls' ability to cope with emotion-eliciting events differently (Saarni, 1995 as cited in Saarni et al., 1998). It is suspected that gender differences in ratings by parents and teachers are possibly due to differences in gender-role socialization, in that children's behaviour is interpreted in accordance with gender-related beliefs (Eisenberg et al., 1996). Although parents may report some similarity in emotional responding, there is evidence that parents have different expectations in regard to boys' and girls' expression of emotion and may reinforce the expression of emotion differentially (Eisenberg et al., 1998). For example, different consequences were associated with the expression of sad versus angry expressions for school-aged girls and boys (Brody, 1996). A number of research studies have found that mothers speak about emotion language differently to boys and girls (Eisenberg et al., 1998). Mothers refer more to emotions when talking to girls and tend to differ in the valence used (i.e., more positive valence with girls and negative valence with boys). In addition to parents interacting differentially depending on gender, there is also evidence that children expect parents to respond differently to

expression of emotion (i.e., disapprove more of expression of sadness in boys, disapprove more of expression of anger in girls) (Eisenberg et al., 1998). Thus, there are gender differences in bidirectional parent-child interactions (Brody, 1996).

Developmentally, there is a shift across middle childhood and into adolescence whereby males become less facially expressive and females become more so, and by adulthood there are marked gender differences in the degree to which emotions are expressed (Brody, 1996). It is possible that the course of parent-child emotion socialization interactions is influenced by gender differences in language development, emotional expressiveness, and arousal level. Girls are more verbally expressive at earlier ages, so the interaction pattern may have parents talking more with girls than boys about emotions. Alternatively, the developmental trajectories for emotion may differ by gender due to differences early in life in messages regarding the type of emotional expression acceptable in social interactions (Underwood, 1997).

In summary, although gender has been identified as contributing little variance to various aspects of emotional functioning, there are a few areas of emotional functioning which have been associated with gender differences. Specifically, although there are few gender differences on measures associated with emotional competence, gender differences have been identified in the specific strategies used for coping with emotion. Also, gender differences have been identified in bidirectional parent-child interactions and developmental changes in emotional expression. The observed differences may be related to differences in gender-role socialization. Alternatively, differential developmental trajectories for emotion may be influenced by gender differences in language development, emotional expressiveness, and arousal level.

Familial/Environment. There is little disagreement among researchers that the parent-

child interaction is of critical importance for the development of emotional competence. Given the social meaning of emotional experience, Saarni (1999) has asserted that emotional competence can only develop through relationships with others, and that social and emotional development are reciprocally influential. Thus, parent-child emotional interactions influence the child's later ability for all social relationships (Ashiabi, 2000). Further, children with compromised parent-child emotional interactions (e.g., who were severely physically or emotionally abused by their parents), tend to have maladaptive emotion regulation abilities and increased incidence of emotional dysfunction (Mrazek, Mrazek, & Klinnert, 1995; Shields & Cicchetti, 2001; Shipman et al., 2000).

Kopp (1989) has conceptualized the development of affect regulation as a process in which the initial regulation is provided by the caregiver but gradually the child acquires the ability to regulate affect. Thus, at birth a baby lacks the ability to emotionally self-regulate; the ability to calm or soothe is provided by the care-giver. Early on, infants begin to alter unpleasant or distressing states with initially accidental behaviour patterns (e.g., non-nutritive sucking, gaze aversion, tactile stimulation), but cannot alter the cause of the distress, so the caregiver is critical (Cole et al., 1994; Kopp, 1989). Over time, the caregiver's role diminishes as the child becomes increasingly adept at self-regulation.

There is general consensus that parents are important in the early regulation of negative and positive states and that direct parent-child interactions influence the development of emotional competence (Garner, 1999; Gottman et al., 1997; Ramsden & Hubbard, 2002; Thompson, 1991). Specifically, the manner in which parents teach the regulation of emotion and emotion-related behaviours plays a major role in children's developing emotional competence, and

parent-child conversations about emotions serve as a context for explaining the necessity of regulating emotions in certain situations and for teaching the rules for expressing emotions. For example, children are more likely to use a display rule when their mothers frequently discussed the causes of emotions with them as preschoolers (Garner, 1999). The emotion understanding of children in preschool is dependent on their mother's beliefs about emotion and socializing of emotion, and children in middle childhood evidence greater emotional understanding when their mothers engage in more discussion of emotion (Dunsmore & Karn, 2004; Shipman & Zeman, 1999). Parental labelling and discussion of emotional states and experiences is one of the central means by which young children learn about emotions (Eisenberg et al., 1998). Parents who are high in emotional awareness and are more likely to believe that children's emotions are an opportunity for learning, are more likely to teach the child appropriate strategies for coping with their emotions (Gottman et al., 1996). In addition to teaching problem-solving strategies, parents also support the development of emotional competence through supporting the development of internal working models, and by providing emotion language (Greenberg, Kusche, & Speltz, 1992).

There are a number of other aspects of parent-child emotion interactions that may directly influence the development of emotional competence, such as the timing of the interaction or the specific emotion that is targeted. For example, if the parent waits to interact with the child until the child's emotional state has escalated to a high level, the parent may inadvertently reinforce subsequent rapid escalation to high levels of distress, which then makes it harder for the parent to soothe the child/infant (Thompson, 1991). The timing of caregiver interventions likely depends on the situation, the developmental level of the child, and the caregiver's belief system (Saarni,

1993). The parental qualities of warmth, positive responsiveness, inductive reasoning, and parental control have all been found to be related to the development of emotion regulation (McDowell, Kim, O'Neil, & Parke, 2002).

Parents also influence emotion development indirectly (Saarni, 1993). Children are exposed to parental reactions toward children's emotions, parental discussion of emotion with persons other than the child, and parental expression of emotion (Eisenberg et al., 1998). Parents will interact with their children differently depending on their personal beliefs and cultural values about the suitability of different emotions, including intensity and expression (Eisenberg et al., 1998; Thompson, 1991). Children are expected to meet family and social standards of conduct by matching expected expression of emotion and behaviours associated with emotion in particular situations (Kopp, 1989). Parental modelling of emotional expression and emotional responsiveness to the preschooler's emotions are predictive of the preschooler's emotional competence (Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997). Individual differences in school-ager's emotional competence are related to how mothers typically react to their children's negative emotions, to general family emotional climate, and to maternal empathy (Smith & Walden, 2001). Thus, parental emotions may reflect the quality of parenting and the impact of environmental stressors on the family (Dix, 1991). Further, the care-giving conditions created by the parents will influence the frequency, regularity, persistence, and intensity of opportunities for emotional experience, and the care-giving conditions are influenced by and include parental socioeconomic status, child-rearing values, and the physical ecology of the home (Thompson, 1991).

In summary, the parent-child relationship has been identified as critical to the development

of children's emotional competence. Parents influence children's emotional competence both directly and indirectly. Direct parental influences include: parent-child discussions and parental teaching about problem-solving strategies and regulation of emotions (i.e., communication), the timing and degree of parental involvement or encouragement of autonomy with respect to emotion-eliciting situations, parental responsiveness to children's emotion states, and parental modelling of emotion problem-solving. Indirect parental influences on children's emotional competence include: parental reactions to children's emotions and parental expression of emotion, parental modelling of personal beliefs and cultural mores, environmental stressors, and care-giving conditions. Although a number of aspects of the parent-child relationship have been identified as contributing to the development of emotional competence, most researchers have been interested in only one or two of the parenting variables, and have failed to consider the interaction between various parenting variables and child attributes.

Interaction Between Factors That Influence the Development of Emotional Competence

To this point, it has been shown that a number of factors, both intrapersonal and interpersonal, influence the development of emotional competence. Next, evidence will be presented for a reciprocal interaction between each of the factors identified to this point.

Intrapersonal Factors. As has been demonstrated, there are a number of individual attributes that contribute to the development of children's emotional competence, including physiological factors, temperament/personality, cognitive processes, language skills, and gender. Children's behaviour, emotion and cognition become increasingly integrated over the first five years of life, such that children's capacity for emotional competence depends not just on individual attributes, but also on an integration of emotion awareness, affective-cognitive control,

and social-cognitive understanding (Greenberg et al., 1992). Further, developmental increases in facets of emotional competence rely on neurophysiological development, growth of cognitive and linguistic skills, and the emergence of self-understanding (Thompson, 1991). Thus, both capacity for emotional competence and developmental increases in emotional competence rely on a complex interaction between individual attributes.

Of particular note is the evidence that children's cognitive development influences other attributes related to emotional competence. Specifically, children's cognitive capacity has been shown to attenuate temperamental endowment (i.e., inhibition) (Asendorpf & van Aken, 1994). Specifically, children's cognitive strategies for coping have been found to moderate the link between temperament and behavioural outcomes (Blair et al., 2004). Cognitive development also interacts with birth order and the age of the child, such that the influence of birth order on cognitive capacity is not measurable until after approximately twelve years of age (Zajonc, 2001). Children's cognitive capacity is strongly related to language skills (McLoughlin & Gullo, 1984). The correlation between cognitive and language abilities is such that one language measure has been identified by the test authors as a screening test of intellectual functioning (Dunn & Dunn, 1997). Finally, there is evidence that gender interacts with physiology (e.g., vagal tone) and language ability, resulting in differential social functioning and emotion regulation (Eisenberg, Fabes, Murphy, Maszk, Smith, & Karbon, 1995). Girls generally have superior language skills early on and also tend to use more internal strategies to cope with emotion-eliciting events (Brody & Hall, 1993).

In sum, a number of interactions between attributes associated with emotional competence have been identified. However, there are also factors external to children that contribute to

emotional competence. Next, the interaction between individual attributes and factors outside the child will be considered.

Interaction between parent and child characteristics. Given that the parent-child interaction is of critical importance for the development of emotional competence, and that the development of emotional competence is also influenced by individual attributes, it is not surprising that some parenting traits interact with children's attributes to influence the development of emotional competence. There are a multitude of parent and child characteristics that could potentially contribute to the development of children's emotional competence, yet most research has focussed on just a few variables (e.g., maternal controllingness or warmth) (Bates & McFadyen-Ketchum, 2000). More recently, research in this area has been extended to a consideration of how the contributory variables interact. The majority of the research considering the interaction of variables that contribute to the development of emotional competence has been conducted by Gottman and his colleagues (Gottman et al., 1997). Before considering Gottman's work, other factors influencing parent-child interactions will be considered.

Some parenting traits have been associated with changes in children's temperament. For example, it has been demonstrated that the emotional tone of the family is related to stability and change in infant temperament (Belsky, Fish, & Isabella, 1991). Specifically, positive change in infant temperament (i.e., from high to low negative emotionality) is more likely for families in which mothers are high in self-esteem, have more positive marital experience, and experience more positive interactions with the infant. In contrast, negative change in infant temperament (i.e., from low to high negative emotionality) is more likely for families in which fathers are less affectively oriented toward others, and report less satisfaction with the marriage. Level of

maternal involvement has also been found to be associated with the level of inhibition of children (Arcus, 1991 as cited in Kagan, 1998). Specifically, mothers who protect high-reactive infants from all stressors tend to have children more likely to retreat from the unknown, whereas mothers who set firm limits assist their infants to overcome their fears of the unknown. Thus, although temperament is accepted as having a biological basis, temperamental tendencies may be strengthened or attenuated by the experiences encountered including those provided by parents (Kagan, 1992). Overall, reported temperament-parenting interaction effects are weak and, for studies that do report an interaction, a large proportion of the variance remains unaccounted for.

Some parenting behaviours may be influenced by parental beliefs and expectations of the child's behaviour. In one study, maternal beliefs about the learning of socially competent behaviours and the origins of maladaptive behaviours were related to both parent-child interaction patterns and children's social behaviours (Rubin & Mills, 1990). Specifically, there were different patterns of beliefs, expectations, and interaction patterns for mothers of aggressive children as compared with mothers of withdrawn children. Given the correlational nature of this research, it was not possible to determine whether the beliefs evolved from the behaviours or the behaviours from the beliefs. However, it is important to note the relationship found between parental beliefs about causal attribution and actual parent-child interaction patterns.

Gottman and his colleagues have theorized that parental styles of emotion socialization depend on the parent's thoughts and feelings about emotion (i.e., meta-emotion philosophy) (Gottman et al., 1997). Gottman hypothesizes that the child's regulatory physiology is influenced by positive parenting skills during emotional interactions. Both vagal tone and the ability to suppress vagal tone at 4 years of age were related to the extent to which parents directly taught

children appropriate strategies for coping with emotion (i.e., coached emotion), and both vagal tone and the ability to suppress vagal tone were predictive of children's ability to regulate negative affect at age 8 years (Gottman et al., 1996). Thus, it is suggested that the quality of the parent-child interaction may shape the child's physiological reactivity to environmental events, and that parents teach children how to regulate their emotions by helping them gain control over their physiological reactivity (Katz & Gottman, 1997). Thus, although regulatory abilities derive in part from heredity (e.g., temperament), children's regulation can be facilitated by their parents, and parents who are supportive in regard to encouraging appropriate expression of emotion and in coaching of emotion tend to have children who exhibit relatively well-developed regulatory abilities (Gottman et al., 1997). Further, although it was determined that parental reports of temperament were unrelated to parent coaching, possible interactions between parental coaching and temperament were not considered.

Parental involvement, such as through teaching of appropriate strategies for coping with emotion, may interact with the child's individual attributes and developing physiology. If parents are able to assist the child to regulate or express emotion through how they respond to the child, then the child may be better able to both express the emotion and process cognitive information related to the emotion (Eisenberg et al., 1998). Thus, parenting behaviours may guide development of the child's cognitive and language abilities as they relate to emotion. Also, if the parent has a more supportive reaction to the child's expression of emotion, then the child tends to view the world as supportive. Gender, temperament, and parenting were found to interact in predicting externalizing disorders in preschoolers (Shaw, Winslow, Owens, Vondra, Cohn, & Bell, 1998). Parental emotion coaching and child aggressiveness were found to interact in

predicting peer relations in preschoolers (Katz & Windecker-Nelson, 2004). In summary, intuitively it appears likely that gender, developmental level, temperament, and other variables are affected differentially by emotion-related socialization behaviours of parents, but there is little research in this area.

One aspect of parent-child interaction that has not been addressed concerning influences on the development of emotional competence is that of family size. As the number of children in a family increases, children's scores on tests of cognitive skills decrease, putatively due to a dilution of parental resources (Downey, 2001). Although there is no evidence of a relationship between family size and emotional competence, it is possible that parental contribution to emotional competence may also be negatively influenced by dwindling parental resources as reflected in sibship size. Specifically, the larger the family, the less access children have to some parental traits that have been demonstrated as influencing emotional competence, such as individual parental involvement, communication about emotion, and parental support and coaching during emotion-eliciting events (Downey, 2001).

In summary, a number of parenting traits have been investigated as influencing child attributes associated with the development of emotional competence, including the emotional tone of the parent-child interactions, degree of parental involvement, parental thoughts and feelings about emotion, and the sibship size. Of note is the limited amount of research that has considered the interactions between child attributes, parental beliefs, and differential parent-child interactions. Thus, although investigators have considered specific parent characteristics that could potentially contribute to the development of children's emotional competence (e.g., emotional tone of the family), research has not been extended to a consideration of how the contributory variables

interact until recently.

Impact of Child Characteristics on Parent-Child Interactions. Thus far, the research literature that addresses both the influence of parenting traits on emotional competence and the interaction between parenting traits and children's attributes has been reviewed. This review has not yet considered the impact of child characteristics on parent-child interactions. Research has demonstrated that children's behaviour can affect subsequent interactions with adults (Bell & Chapman, 1986). Further, research has consistently demonstrated that children themselves elicit consistent responses from others that in turn may influence the child's development (Chess & Thomas, 1987; Scarr & McCartney, 1983). Most research has identified temperament as the primary attribute responsible for eliciting responses from the environment and guiding children's choices, and there is evidence that temperament elicits particular parental responses.

Temperament may influence the child-environment interaction in a number of different ways. First, through genetically-influenced behaviours, children evoke particular responses from the environment (Scarr & McCartney, 1983). Specifically, genetic factors can affect how individuals may respond to a child by predisposing the child to behave in certain ways in particular contexts (Bussell, Neiderhiser, Pike, Plomin, Simmens, Howe et al., 1999; Walden & Smith, 1997). Alternatively, the child may behave similarly to different people, yet elicit similar responses (Scarr & McCartney, 1983). Finally, genetic factors may lead to the child's actively selecting certain environments and avoiding others (Scarr & McCartney, 1983; Walden & Smith, 1997).

With respect to parent-child interactions, there is evidence that temperament elicits particular parental responses. It is hypothesized that early temperamental characteristics influence socialization processes by helping to shape the kind of parenting the child elicits (Bell &

Chapman, 1986; Dibble & Cohen, 1974). For example, there are a higher number of conflictual parent-child interactions when children are highly active, non-compliant or impulsive (Dix, 1991). Given that negative parental reactions can heighten and extend emotional arousal, and that parents who are non-supportive toward children's negative emotions tend to view their children as prone to negative emotions, this can be expected to undermine parental emotion management strategies and diminish subsequent learning about emotions for children (Eisenberg et al., 1996). Children prone to negative emotions may elicit more negative parental reactions, and in turn, the negative parental reactions further promote children's negative emotion behaviour. Alternatively, children's initial social and academic competence was found to elicit protective parenting processes, which was then related to positive psychological functioning at a later time (Brody, Kim, Murry, & Brown, 2004). As well, a child's temperament is one of the factors that predicts the quality of parent-child communication (Laible, 2004).

Developmentally, temperament itself may change over time and may subsequently influence age-related changes in how children evoke particular responses from their environment (Walden & Smith, 1997). Specifically, infants or toddlers may evoke particular responses from the environment either passively or evocatively through genetic-based behaviours (Scarr & McCartney, 1983). As children develop, temperament is more likely to express itself actively as the child seeks or creates environments that are compatible. Thus, as children grow older they increasingly choose and construct their own environment, possibly by selectively choosing peer groups with similar characteristics, and activities or social environments that are compatible with their dispositions (Caspi, 1998). Thus, the child-environment interaction changes as a function of the child's developmental status.

In summary, children's attributes influence the parent-child interaction through genetically-influenced child behaviours that evoke particular responses from the environment and lead to the child's active selection of certain environments and avoidance of others (Scarr & McCartney, 1983). The particular parental responses that the child elicits may, in turn, influence the development of emotional competence. Developmentally, children influence their environment in a passive manner before they actively influence the environment that they live in.

Optimal child-environment interaction.

Thus far, evidence has been presented that supports the notion that certain aspects of parent-child interactions influence the development of children's emotional competence. Further, particular individual attributes associated with the development of emotional competence (i.e., temperament) elicit parental responses. To date, researchers interested in the development of emotional competence have tended to focus on theories of parent-child interactions that suggest that there are optimal parenting behaviours associated with the development of emotional competence (e.g., Gottman et al., 1996). In contrast, "optimal-level" or "goodness-of-fit"models suggest that, rather than specific parent or child attributes being of primary importance to the child's outcome, it is the fit between parent and child attributes that is most relevant to the child's outcome. Before presenting evidence that supports the importance of good fit between child and environment for the development of emotional competence, specific terms will be defined. In addition, constraints on optimal child-environment interactions will be reviewed.

Goodness-of-fit models purport that children adapt best when there is a match between the child's attributes and the demands of the environment (Thomas & Chess, 1977). Most often this is interpreted as meaning goodness of fit between the characteristics of the child, such as

temperament, and the demands of the child's environment, such as parenting (Putnam, Sanson, & Rothbart, 2002). In terms of parent-child interactions, the model recognizes that both parents and children have capacity to respond differentially to a wide range of situations, with goodness of fit between parent and child being more predictive of favourable outcome. Empirical evidence supports the notion that parents respond differently to children with different temperamental patterns; the same parental behaviour may evoke a negative or positive response depending on the child's temperament. Similarly, optimal-level models recognize individual preferences for specific levels of stimulation and identify mismatches in optimal levels between parents and children as being associated with the need for individual adaptations (Rothbart & Bates, 1998). For example, an inhibited child may prefer to limit social interactions whereas the child's uninhibited parent may prefer to seek out social interactions. Mismatches in optimal levels between a parent and child may lead to problems for both the child and the caregiver. Both the goodness-of-fit and optimal-level models are consistent with the notion that particular parent or child attributes are not necessarily better than others, instead positive developmental outcome depends on the interaction between parent and child characteristics.

Evidence of need for a balance between demands placed on the child and respective capabilities, characteristics, and style of behaviour can be found in research that evaluated predictors of psychopathology in children (Kashani, Ezpeleta, Dandoy, Doi, & Reid, 1991). It was determined that the best predictors of child psychopathology were the child's temperament and parental characteristics (i.e., emotional coldness, negativism, abuse from the mother, father not fulfilling the child's emotional needs). Statistical analyses revealed that one of these factors alone is insufficient to lead to psychopathology, but that the interaction between the child and the

environment is necessary for the development of psychopathology. Further, the child's characteristics (e.g., temperament) can provide a buffering effect when the child's particular characteristics match the parent's needs in a high-risk situation (Radke-Yarrow & Sherman, 1990).

There are constraints on optimal child-environment interactions. Specifically, good fit between child and environment may be less important than the circumstances under which the child influences the environment as opposed to the environment influencing the child. It is hypothesized that children in the middle range of the temperament dimension are more likely to be influenced by the environment whereas children at the extremes are more likely to alter their environment (van den Boom & Hoeksma, 1994). For example, one study revealed that, although in general maternal behaviour was more positive with non-irritable than irritable babies, the mothers' behaviours changed differentially over time (i.e., visual contact, effective stimulation, physical contact, soothing, responsiveness to the baby's signals). Specifically, mothers of irritable babies responded differently toward the babies over time whereas the mothers of non-irritable babies responded similarly over time. Further, there may also be variability across contexts with respect to how much the environment bends to the child (Rothbart & Ahadi, 1994). For example, for some children, parents may structure the environment to suit their child (i.e., minimize the child's distress or provide extra stimulation), but preschool teachers typically do not and expect the child to conform to the school's structure.

There is a normative assumption that, within families, parents should treat children equally, but this assumption runs counter to the goodness-of-fit or optimal-level models. The optimal-level model emphasizes that each child's needs are met and, within families, sibling's

needs may differ based on developmental status, language skills, or temperament. Recent research has demonstrated that a simple relationship between equality of parenting behaviours and sibling outcome is unlikely (Kowal & Kramer, 1997; Kowal, Kramer, Krull, & Crick, 2002; McHale, Updegraff, Jackson-Newsom, Tucker, & Crouter, 2000; McHale et al., 1995). In some families parents do not respond differentially to siblings despite readily apparent differences in the siblings. Hudson and Rapee (2002) compared parent-child interactions for anxiety-disordered children and their siblings. Mothers of anxiety-disordered children were more intrusive and involved than non-clinic-referred mothers, and were equally involved with the sibling. Therefore, parental over-involvement did not occur exclusively with the anxiety-disordered child and was not associated with pathology in the sibling. Further, siblings' perception of differential treatment is important. Differential treatment alone is not indicative of a poorer parent-child relationship unless the child receiving the less desired parental characteristic perceives the differential treatment to be unfair (Kowal, Krull, & Kramer, 2004).

In conclusion, evidence has been presented that supports the notion that more favourable outcomes are associated with a good match between parent and child characteristics. According to goodness-of-fit and optimal-level models, the best parenting attribute for the development of emotional competence may be adaptability or flexibility. Specifically, based on the evidence presented thus far, it appears that more favourable outcomes are associated with good fit between parents and children. Thus, the best parenting style may be one that is adapted to fit the child's attributes. However, there are constraints on good fit between child and environment in that some environments (e.g., preschools) may not be able to adapt to the child's characteristics and good fit may be more important for children at the extremes of characteristics.

Rationale for the Present Study

Research has demonstrated that deficits in the skills associated with emotional competence are also associated with maladaptive outcomes in both childhood and adulthood. To date, much research on the development of emotional competence has followed one of two approaches; that is, development of emotional competence is conceptualized as resulting predominantly from parenting characteristics, or as resulting from interactions between child and contextual characteristics. Despite evidence cited that emphasizes the likely interaction between multiple factors contributing to the development of emotional competence, there has been limited research comparing the relative contribution of these factors, and possible interaction between these factors, to the development of emotional competence in siblings (Eisenberg et al., 1998). Further, although it has been documented that non-shared environmental factors contribute substantially to individual differences, investigators have not yet explored sibling differences in emotional competence nor have they utilized a within-family methodology.

The primary goal of this study is to determine whether individual differences in emotional competence can best be accounted for by child characteristics, parent characteristics, or a reciprocal interaction between child and parent characteristics. To date, research has focussed primarily on differences between families, rather than within families. In order to assess whether parent characteristics interact with child characteristics, this study will investigate factors influencing differential emotional competence in siblings. The child characteristics that will be evaluated will include personality, cognitive/language ability, gender, and age. Parenting characteristics of interest will include direct parental influences, such as communication, involvement or encouragement of autonomy, and parental support of children's emotional states.

Hypotheses

Hypothesis 1: Sibling differences. Limited research to date has compared siblings on measures associated with emotional competence. Thus, the extent of sibling similarities on measures associated with emotional competence will be explored. Specifically, sibling pairs will be compared on measures of temperament/personality, cognitive/language ability, and emotional competence. Based on the findings of previous sibling research, it is expected that there will be greater difference between siblings on measures of personality than language. Given that both temperament/personality and cognitive/language ability have been shown to be related to emotional competence, and that siblings differ significantly on these variables, it is expected that siblings will also differ on measures of emotional competence.

Hypothesis 2: Contribution of parent and child characteristics to emotional competence. In light of evidence that both parent and child characteristics contribute to the development of emotional competence, it is expected that there will be a link between parent and child characteristics that have been previously identified as contributing to emotional competence. It was anticipated that children who have more positive temperament/personality characteristics and good emotional competence will have parents who are involved yet allow for autonomy, have positive parent-child communication, and are responsive to, and support, children's emotional states.

Hypothesis 3: Differential parental interaction with siblings. The extent to which differential experiences within the family explain variance in emotional competence, independent of child age or cognitive/language ability, will be explored. It is expected that differences in sibling's emotional competence will best be accounted for by an interaction between parent and

child characteristics. Specifically, it is expected that when parents tailor their parenting to the individual child's characteristics (e.g., temperament / personality), then it is more likely that the siblings will exhibit emotional competence. For example, it is expected that when siblings have similar personalities and experience similar parental behaviours, then the siblings will exhibit similar emotional competence. Similarly, if siblings have different personalities and experience parental behaviours that are attuned to each sibling's individual attributes, then it is expected that the siblings will exhibit optimal emotional competence. Alternatively, if siblings either have different personalities and experience similar parental behaviours, or have similar personalities and experience different parental behaviours, then it is expected that the siblings will exhibit different emotional competence. See Figure 1 for illustration.

Figure 1

Illustration of Emotional Competence Outcome Resulting from Interaction Between Parent and Child Characteristics

Sibling Characteristics:	Parenting Characteristics: Attuned to each child's characteristics	Same for each child, regardless of characteristics
Same	optimal emotional competence	similar emotional competence
Different	optimal emotional competence	different emotional competence

CHAPTER II

METHOD

Participants

Families were recruited from a number of heterogeneous sources (e.g., undergraduate psychology classes, schools, community-based parent groups, child day camps) in a small Southwestern Ontario town. University student parents participating in the study were offered extra course credit in exchange for their participation. The sample consisted of 96 familial units, with one parent participant and at least two children between the ages of 6 and 12 years of age. If the family consisted of more than two children in the age range of interest, the parent selected the two children who participated. If more than one parent resided in the familial home, the parent who has predominately interacted with the children was asked to complete the measures. The families ranged in size from 2 to 4 children, with 44% of the families having 2 children, 44% with 3 children, and 12% having 4 children. Four sets of twins participated in this study. Participating families had mostly two parents in the home (n = 79, 82%). In 95 of the families both children were biologically related to the parent; in the remaining family the children were adopted. Participating parents ranged in age from 29 to 48 years (M = 38.48, SD = 4.7). See Table 1 for a summary of the demographic characteristics of participating parents. The younger siblings ranged in age from 72 months to 145 months (M = 98.9, SD = 17.9) and older siblings ranged in age from 89 months to 158 months (M = 127.7, SD = 18.4) Of the participating sibling dyads, 24 were brothers, 26 were sisters, 21 were older sisters and younger brothers, and 23 were older brothers and younger sisters. See Table 2 for a summary of the demographic characteristics of the participating children.

Table 1

Parent Demographic Characteristics

Characteristic	*n*	%
Gender		
Female	87	90.6
Male	9	9.4
Race / Ethnicity		
White	86	89.6
Indian / Native	4	4.2
Asian	2	2.1
Arabic	2	2.1
Mixed ethnicity	2	2.1
Highest education level completed		
Some high school	1	1.0
High school	11	11.5
Some college/university	27	28.1
College / university	49	51.0
Post-graduate degree	8	8.3
Occupation		
Unemployed	1	1.0
Student	7	7.3
Home-maker / stay-at-home mom	19	19.8
Employed	58	60.4
Multiple roles	11	11.5

Table 2

Child Demographic Characteristics

Characteristic	Younger Sibling		Older Sibling	
	n	%	*n*	%
Gender				
Female	50	52.1	48	50.0
Male	46	47.9	48	50.0
Birth order				
First			69	71.9
Second	64	66.7	25	26.0
Third	29	30.2	2	2.1
Fourth	3	3.1		

Measures

The intent of this investigation was to explore whether individual differences in emotional competence can best be accounted for by child characteristics (e.g., temperament/personality, cognitive/language ability, age), parent characteristics or behaviours (e.g., communication, degree of involvement or encouragement of autonomy, parental emotional support), or a combination of child and parent characteristics. Thus, measures utilized include measures of children's personality, cognitive/language ability, emotional competence, and a measure of parenting characteristics or behaviours.

Demographic information. Parents were asked to complete a short information form (see Appendix A). Information requested included parental age, gender, ethnicity/race, education, occupation, marital status, and date of birth and gender for each of the siblings. The ethnicity/race classifications are consistent with the standards for U.S. federal agencies set by the Office of Management and Budget, and supported by the National Center for Education Statistics (U.S. Department of Education, 1998).

As brain damage has been associated with disruption of the developmental pathway of emotional competence, the information form asked whether either child had any previous diagnosis of head injury requiring medical attention (Bradley, 2000). Five of the older siblings and three of the younger siblings had required medical attention following a head injury (primarily stitches). Of the children diagnosed with brain infections, epilepsy, or ongoing health concerns, parents identified three of the older siblings and six of the younger siblings. Of those ever diagnosed or treated for a psychiatric or psychological disorder, three were older siblings and two were younger siblings. Parents indicated that five of the older siblings and three of the younger

siblings had been prescribed medication for any reason other than physical illness. The reasons given were primarily for inattention, focusing or behaviour, although some parents indicated the medication was prescribed for "ADD" or "ADHD" without also indicating that the child had been diagnosed with a psychiatric or psychological disorder. All medications prescribed were psycho-active in nature (e.g., Ritalin).

Child cognitive/language ability. The Peabody Picture Vocabulary Test - Third Edition (PPVT-III; Dunn & Dunn, 1997) is a widely-used measure of receptive vocabulary that has been normed on a representative sample and is valid for children 3 years of age and older. The examiner reads a vocabulary word aloud then asks the child to select one of four pictures that most accurately represents the target word. Higher scores are associated with greater language ability. The PPVT-III is not a measure of intelligence but correlates significantly with tests of general intelligence and provides a gross measure of the child's general knowledge as reflected by the child's level of receptive vocabulary (Dunn & Dunn, 1997). As it is important that assessment of emotion understanding is not a proxy for verbal intelligence, the PPVT-III was used to control for differences in children's responses that may be related to cognitive/language skills (Eisenberg et al., 1998). Data sets for two families were removed from this investigation as one or both children's scores on the PPVT-III fell below the Low Average range. Data sets for 94 families were included in statistical analyses.

Child personality. Although there has been little clarification in the research literature as to the ages at which temperament and personality are most salient, a recent review suggested that temperament is transformed into personality as part of an overall developmental transition between preschool and middle childhood (Shiner, 1998). As the child participants in the current

investigation were restricted to children in middle childhood, the most salient construct of individual differences was determined to be personality.

As noted in the introduction, for children over age six, the most differentiated list of personality dimensions has been identified as: (a) positive affect, (b) activity level, (a and b combined = positive emotionality / approach / extraversion), (c) fearful distress, (d) irritable distress (c and d combined = general negative emotionality / neuroticism), (e) effortful control / task persistence / conscientiousness, (f) agreeableness / aggression / adaptability (Caspi et al., 2005; Rothbart & Bates, 1998; Shiner, 1998). However, there is currently no measure of personality for children in middle childhood based on this list. Instead, current measures of personality in middle childhood tend to be downward extensions of measures based on theoretical models or used in research with adults. The five-factor model of personality includes the dimensions of extraversion, conscientiousness, openness/intellect, agreeableness, and neuroticism (John, Caspi, Robins, Moffitt, & Stouthamer-Loeber, 1994). Thus, there is significant overlap between the five-factor model of personality and the dimensions identified as best differentiating personality in middle childhood. Thus, it appears that the most salient personality dimensions in middle childhood include four of the factors from the five-factor model.

Given that evidence supports the validity of four of the five factors from the five-factor model of personality for children in middle childhood, this study utilized the "common-language version" of the California Child Q-Set (CCQ) (see Appendix B) to measure child personality (Block & Block, 1980; Caspi, Block, Block, Klopp, Lynam, Moffitt et al., 1992; Goldsmith et al., 2000; Pedlow, Sanson, Prior, & Oberklaid, 1993; Rothbart & Bates, 1998; Shiner, 1998). The CCQ was initially derived from the adult California Q-set, and the original child version was

intended to be used by clinicians and researchers as an observer-based, atheoretical instrument to describe children's personalities (Block & Block, 1980). The language of the CCQ was simplified by Caspi and his colleagues (1992) to produce a version that could be used by nonprofessional observers (e.g., parents). This new "common-language version" of the CCQ was demonstrated to be as reliable and valid as the original version.

John and his colleagues (1994) rationally constructed scales to measure dimensions in the CCQ that reflect the dimensions of the five-factor model of personality, and demonstrated the reliability and validity of the scales. The scales were first derived by expert raters who selected Q-sort items most salient for each construct, and then dropped the items without discriminant validity (John et al., 1994). Although there are other measures of the five-factor model of personality for children in middle childhood, the Q-sort procedure is preferred because it reduces response bias by forcing raters to sort responses into a fixed distribution (Caspi at al., 1992). Other benefits of the Q-sort procedure include that the procedure makes ipsative comparisons of an individual's qualities rather than comparisons with other persons and may be analysed using a number of different strategies. The CCQ has been used in previous research to assess the five-factor model of personality children between two and twenty years of age (Caspi et al., 1992; Shields & Cicchetti, 1997; van Lieshout, DeMeyer, Curfs, & Fryns, 1998).

The CCQ consists of 100 statements (Block & Block, 1980). The parent sorts the statements into a forced-choice, nine-category rectangular distribution that ranges from "extremely uncharacteristic" to "extremely characteristic," with items that are neither uncharacteristic nor characteristic in the middle position. For the purpose of this investigation, only the personality dimensions consistent with those identified by Shiner (1998) were analysed.

Specifically, the scales that were analysed included: extraversion(i.e., sociability and expressiveness), agreeableness (i.e., affectionate, forgiving, generous, kind, sympathetic, trusting), conscientiousness (i.e., efficient, organized, planful, reliable, responsible, thorough), and neuroticism (i.e., anxious, nervous, worry, low self-esteem).

Child emotional competence. The measures chosen to assess emotional competence must reflect the definition of emotional competence, as was discussed in the introduction. Because the study of emotional competence is a relatively new field, a reliable and valid comprehensive measure of children's emotional competence is not available. To that end, two measures were used to assess different aspects of emotional competence. The first evaluated children's identification, understanding, and expression of emotion, and the second evaluated children's emotion regulation capacity.

The Emotion Understanding Interview (EUI; Cassidy, Parke, Butkovsky, & Braungart, 1992) (see Appendix C) was administered to assess children's identification and expression of emotion. The EUI is a relatively new instrument that was designed to measure six conceptual categories of children's understanding of emotions (i.e., identification of the emotion, experience of the emotion, circumstances leading to the emotion, expression of the emotion, action responses to the display of the emotion, feeling responses to the display of the emotion) (Cassidy et al., 1992). This measure requires that a child look at pictures of another child who is experiencing an emotion and then answer a series of fifteen open-ended questions that reflect the child's understanding of the causes and consequences of emotional experience and appropriate responses to emotional displays. The same four pictures (one each of sad, angry, afraid, and happy) were presented to every child. Order of pictures presented was randomized. Items are scored

dichotomously and then summed yielding a total understanding score. Higher scores are associated with more positive emotion understanding. The EUI consists of five rationally-derived scales that assess identification of emotion, experience of emotion, causes of emotion, expression of emotion, and action responses to emotional displays. Principal components analysis has demonstrated support for the combining of scales to form an overall emotion understanding score (Cassidy et al., 1992). The EUI was initially designed for use with children five to six years of age but has been used in research with children aged five to twelve (Cassidy et al., 1992; Shipman & Zeman, 1999; Shipman et al., 2000). Previous research has demonstrated high inter-rater agreement and internal consistency (coefficient alpha = .83) (Cassidy et al., 1992; Shipman et al., 2000). Construct validity was supported by demonstration of a relationship between emotional understanding and children's social competence, and discriminant validity was supported by demonstration of lack of relationship between emotional understanding and family expressiveness (Cassidy et al., 1992). In the present study, two raters scored a subset of the EUI independently ($n = 64$), and the resulting scores were strongly correlated ($r = .95$). Rating discrepancies were resolved by discussion.

The Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997) (see Appendix D) was administered to assess children's emotion regulation capacity. The ERC evaluates parental perceptions of children's capacity for emotional self-regulation and was constructed to further the study of emotion regulation in children in middle childhood (Shields & Cicchetti, 1997). The ERC has been used in previous research with children between three and twelve years of age (Shields & Cicchetti, 1995 as cited in Shields & Cicchetti, 1997; Shields & Cicchetti, 1998; Shipman & Zeman, 2001; Shipman et al., 2000). The questionnaire consists of 24 items. In previous research,

that assessed emotion dysregulation, the items were rated on a 4-point Likert scale, ranging from 1 (almost always) to 4 (never) depending on how characteristic each item is of a particular child (Shields & Cicchetti, 1997). Because the current study is interested in emotional competence, the Likert scale was recoded, ranging from 1 (never) to 4 (almost always). Higher scores indicate greater ability to regulate emotions. In previous research, two subscales were derived by principal components factor analysis, and include lability / negativity (comprised of items assessing mood swings, angry reactivity, emotional intensity, and dysregulated positive emotion) and emotion regulation (comprised of items assessing adaptive regulation, equanimity, emotional self-awareness, and empathy) (Shields & Cicchetti, 1997). A composite emotion regulation score is also generated that evaluates both regulation and dysregulation processes. The composite score was used in the present study.

High internal consistency, reliability, construct validity, criterion validity, and discriminant validity (i.e., from neuroticism and agreeableness scales of the five-factor model of personality) have been established (Shields & Cicchetti, 1995 as cited in Shields & Cicchetti, 1997; Shields & Cicchetti, 1998; Shields et al., 2001; Shipman & Zeman, 2001; Shipman et al., 2000). Construct validity was supported through association between the ERC and criterion measures of emotion regulation (e.g., observation of emotion regulation behaviours by individuals familiar with the children) and by the measure's ability to discriminate between children who are well-regulated and dysregulated (Shields & Cicchetti, 1995 as cited in Shields & Cicchetti, 1997; Shields & Cicchetti, 1998).

Parenting. Some aspects of parenting that have been identified as influencing children's emotional competence include the degree of parental involvement or encouragement of

autonomy, parent-child communication, and parental responsiveness to, and support of, children's emotion states. Parents were asked to rate aspects of parenting that have been demonstrated to influence children's emotional competence by completion of the Parent-Child Relationship Inventory (PCRI; Gerard, 1994). The PCRI is a 78 item inventory of parenting skills and attitudes designed for use with parents of 3- to 15-year-old children, with a 4-point Likert-type response format, ranging from strongly agree to strongly disagree. There are seven sub-scales (Parental Support, Satisfaction with Parenting, Involvement, Communication, Limit Setting, Autonomy, Role Orientation) and two validity scales that assess inconsistency and social desirability of parental responses. The PCRI sub-scales scores identify positive parenting characteristics or skills based on comparison with a normative sample.

The PCRI is a popular measure used to assess parenting characteristics in child custody evaluations but more recently has been adopted by researchers interested in parental perceptions, behaviours, and characteristics (Conner, 2001; Heinze & Grisso, 1996; Quinnell & Bow, 2001; Stavros, 2002; Suchman & Luthar, 2000). The PCRI has also recently been adapted to the Spanish population (Roa Capilla & del Barrio, 2001). The PCRI has been demonstrated to have good internal consistency (Cronbach's alphas for the subscales range from .70 to .88) and temporal stability (both short- and long-term) (Gerard, 1994). PCRI subscales were significantly correlated with subscales on the Personality Inventory for Children that were consistent with PCRI subscale definitions, moderately correlated with the Parental Acceptance-Rejection Questionnaire, and were uncorrelated with social desirability scales (Gerard, 1994; Heinze & Grisso, 1996; Suchman & Luthar, 2000). However, the value of the validity scales and clinical usefulness are still in question (Heinze & Grisso, 1996). In sum, this measure has demonstrated

good internal consistency and test-retest reliability, with moderate criterion validity and good discriminant validity.

For the purposes of the present investigation, only the PCRI subscales associated with target constructs were interpreted. The aspects of parenting that have been identified as directly influencing children's emotional competence include the timing and degree of parental involvement or encouragement of autonomy with respect to emotion-eliciting situations, parent-child communication, and parental responsiveness to children's emotion states. The PCRI subscales that were interpreted are Communication (i.e., capacity to communicate with children), Involvement (i.e., interest in children's activities), Autonomy (i.e., ability to promote a child's independence), and Parental Support (i.e., parental responsiveness to children's emotion states). Higher scores indicate more positive parenting characteristics.

Procedure

This investigation was reviewed and approved by both the University of Windsor Research Ethics Board and school board ethics review committee. Information sheets were utilized to facilitate the recruitment process (see Appendix E).

Potential participants were contacted by phone by the researcher, and arrangements were made to collect data at either a suitable room in the psychology department at the University of Windsor or at another suitable location (e.g., the family home). Prior to participating in the research, each parent signed a consent form (see Appendix F). The consent form included the study's purpose, what the participants were asked to do, the approximate length of time to complete the study, the participant's right to withdraw at any time, and the name and phone number of the researcher and of the researcher's supervisor to contact with any questions or

concerns they might have about the study. Participants were informed that, if they chose to provide their name and address, the researcher would mail notification of two seminars to be held following the collection of data. The first seminar addressed sibling relationships, and the second addressed how to enhance children's emotional development. In addition, parents were given the option of receiving feedback, by mail, about the children's participation (see Appendix G). At the same time, the siblings were verbally informed of their right to withdraw from the study without penalty and were asked to assent to participating in the study (see Appendix H).

Once all family members consented/assented to participate in the research, parents were asked to complete the Background Information Form before completion of the CCQ, ERC, and PCRI for each child. The measures pertaining to each of the children were presented in counter-balanced order, such that exactly half of the parents completed the measures for the younger child first ($n = 47$, 50%). In order to account for possible sequence effects, the order of administration of the measures was randomized. It is understood that, for samples greater than 40, randomization accounts for possible sequence effects as factors that might obscure interpretation are distributed across groups (Kazdin, 1998).

Data were obtained concurrently from parent and siblings. For example, while the parent was completing the measures for the older child, the researcher administered the PPVT-III and EUI to the older child. The more structured measure (PPVT-III) was administered before the less structured measure (EUI) to allow for rapport building between child and researcher, and for the child to become accustomed to participating in research and the researcher. While the parent and older child were occupied, the younger sibling engaged in an activity of their choosing (e.g., colouring book, gameboy, video). in a separate room. After the measures for the older sibling

were administered, the siblings traded places and the measures for the younger sibling were administered. Following their participation in the study, and with their parent's permission, the siblings were invited to choose an appropriate but inexpensive toy or sticker to thank them for participating in the study. Within one week of participating, parents who requested it were mailed information regarding their children's participation.

CHAPTER III

RESULTS

Overview of Data Analyses

The present investigation explored whether individual differences in emotional competence can best be accounted for by child characteristics (e.g., temperament/personality, cognitive/language ability, age), parent characteristics or behaviours (e.g., communication, degree of involvement or autonomy, parental emotional support), or a combination of child and parent characteristics. Results of investigations of data accuracy and screening, along with influence of demographic variables on dependant variables, are presented first. Sibling correlations for each of the research variables are summarized. Next, the relative contribution of parent and child characteristics, between families, to emotional competence is examined. Then the extent to which differential experiences within the family explain variance in emotional competence, independent of child age, will be explored. Finally, the results are summarized by hypotheses.

Preliminary Analyses

Prior to the statistical analyses of hypotheses, data were screened for outliers and skewness, and all variables fell within acceptable ranges. Baseline assumptions for normality were met. To ensure that data were entered into the data file accurately, a random 20% of data were checked for accuracy. The internal consistency of the Emotion Regulation Checklist was assessed separately for younger and older children using coefficient alpha (Cronbach). The internal consistency for the older children was slightly higher ($\alpha = .86$) than for the younger children ($\alpha = .84$), and in both cases was good.

All research variables were assessed for the influence of age (in months), with the exception of language. The measure used to assess language skills was not assessed for the influence of age as the raw scores were standardized for age; those standard scores were used in all analyses. See Table 3 for a summary of the correlation coefficients. It was anticipated that the criterion variables would be influenced by the children's ages, but it was found that only the younger sibling's emotion understanding scores were related to the children's ages. The scores on a number of predictor variables were related to children's ages. For younger siblings, extraversion was negatively correlated with age whereas neuroticism was positively correlated. For older siblings, both parental involvement and neuroticism were related to children's ages. Given the multiple correlations between age and research variables, age will be accounted for in further analyses.

Criterion variables were assessed for the influence of demographic variables, with the effect of age removed. Variables assessed included: parent age, parent gender, number of parents in the family home, family size, child's gender, birth order, and child's history. The gender of both younger and older siblings was significantly correlated with scores of emotion understanding (EUI: younger sibling, pr (91) = -.223, p = .025 (two-tailed); older sibling, (pr (91) = -.289, p = .005 (two-tailed), with girls having higher emotion understanding scores, but not with emotion regulation. Parent gender was significantly related to emotion regulation for older siblings (pr (91) = -.206, p = .049 (two-tailed), with mothers reporting higher emotion regulation scores than fathers, but not younger siblings (pr (91) = -.186, p = .076 (two-tailed), and was unrelated to emotion understanding for either sibling. Presence of medical history (prior head injury, ongoing health concerns, diagnosis of psychiatric or psychological disorder, medication prescribed) was

Table 3

Correlation Coefficients Between Child's Age and Research Variables

	Younger Sibling	Older Sibling
Variable	*r*	*r*
Dependent variables		
emotion understanding	.44**	.07
emotion regulation	.04	.17
Independent variables		
Parenting		
support	.09	.10
involvement	.09	.24*
communication	.13	.20
autonomy	.02	.17
Personality		
extraversion	-.26*	.20
agreeableness	.09	.04
conscientiousness	-.03	.14
neuroticism	.21*	-.24*

Note.
* $p < .05$ (two-tailed)
** $p < .01$ (two-tailed)

related to the emotion regulation variable for the older sibling only ($F(3,) = 3.90, p < .05$). No other demographic variable scores were shown to be significantly correlated with criterion variables.

Partial correlations were calculated, with the effect of age removed, between all research variables. Analyses were performed separately for younger (see Table 4) and older siblings (see Table 5). There were three findings of note. First, scores on the measure of language skills was related to the emotion understanding score for the younger sibling only (pr (91) = .229, p = .027 (two-tailed), and was uncorrelated with either emotional competence variable for the older sibling. Given the limited influence of language on the dependent variables, children's language skills will not be included in further analyses. The second finding of note was that the criterion variables (i.e., emotion regulation and emotion understanding) were not significantly correlated for either younger or older siblings. Consequently, further analyses that consider the relationship between predictor and criterion variables, such as for Hypotheses 2 and 3, will be conducted separately for emotion understanding and emotion regulation. Finally, review of all correlations indicate no highly correlated variables (e.g., greater than .80), suggesting that multi-collinearity will not impede the main analyses.

Hypothesis 1: Sibling differences.

The extent of sibling similarities or differences on measures associated with emotional competence was explored. Based on the findings of previous sibling research, it was expected that there would be greater difference between siblings on measures of personality than on measures of language skills. As both personality and language ability have been shown to be related to

Table 4

Partial Correlation Coefficients Between Research Variables for Younger Siblings Controlling for Child Age

Variable	1	2	3	4	5	6	7	8	9	10	11
1. emotion understanding	----										
2. emotion regulation	.18	----									
3. language	.22*	.18	----								
4. parent support	-.02	.38*	-.16	----							
5. parent involvement	.14	.19	-.06	.36*	----						
6. parent communication	.20*	.28*	.00	.15	.54*	----					
7. parent autonomy	.20*	.28*	.30*	-.04	-.03	.20	----				
8. extraversion	.20	.06	.08	-.04	.25*	.33*	.07	----			
9. agreeableness	-.01	.60*	-.02	.42*	.05	.10	.17	.19	----		
10. conscientiousness	.13	.54*	.21*	.11	.03	.17	.18	-.04	-.31*	----	
11. neuroticism	.03	-.33*	-.08	-.21*	.02	-.08	-.17	.41*	-.03	.35*	----

Note.

* $p < .05$ (two-tailed)

Table 5

Partial Correlation Coefficients Between Research Variables for Older Siblings Controlling for Child Age

Variable	1	2	3	4	5	6	7	8	9	10	11
1. emotion understanding	----										
2. emotion regulation	.19	----									
3. language	.12	.20	----								
4. parent support	-.05	.38*	-.02	----							
5. parent involvement	-.05	.34*	-.23*	.34*	----						
6. parent communication	.03	.41*	-.13	.30*	.59*	----					
7. parent autonomy	.05	-.28*	.08	.27*	-.03	.15	----				
8. extraversion	.24*	.15	-.16	.09	.20	.39*	.10	----			
9. agreeableness	.27*	.58*	.07	.23*	.28*	.25*	.04	.07	----		
10. conscientiousness	.31*	.61*	-.02	.34*	.23*	.38*	.31*	-.26*	-.31*	----	
11. neuroticism	-.22*	-.39*	-.15	-.17	-.02	-.16	-.24*	.43*	.10	.49*	----

Note.

* $p < .05$ (two-tailed)

emotional competence, and it has been demonstrated that siblings differ significantly on these variables, it was expected that siblings would also differ considerably on measures of emotional competence.

Means and standard deviations for younger and older siblings on each measure are listed in Table 6. After controlling for differences in sibling ages, correlations for the emotional competence, parenting, and personality measures are also shown. As expected, there was low resemblance between siblings with respect to personality traits with the exception of the neuroticism dimension. Strong similarity in parenting characteristics was found across all aspects examined. Surprisingly, there was moderate similarity between sibling pairs on both measures of emotional competence. Siblings were significantly correlated on a measure of language skills, similar to previous findings (Dunn & Plomin, 1990).

Hypothesis 2: Contribution of parent and child characteristics to emotional competence.

The contribution of parent and child characteristics to emotional competence was explored. It was expected that both parent and child characteristics contribute to emotional competence. It was anticipated that children who have more positive temperament/personality characteristics and good emotional competence will have parents who are involved yet allow for autonomy, have positive parent-child communication, and are responsive to, and support, children's emotional states. The investigation also considered the unique contribution of each variable.

Consistent with the assumption of independence, one child was selected from each familial unit to conduct the analyses associated with Hypothesis 2. There are a number of methods to select the child from the sibling pair to be included in the analyses (Kazdin, 1998). The method

Table 6

Means, Standard Deviations and Partial Correlations Between Siblings for Predictor and Criterion Variables Controlling for Child Age

	Younger Sibling		Older Sibling			
Variable	*M*	*SD*	*M*	*SD*	*pr*	*p*
emotion understanding	39.99	8.34	44.83	7.09	.39	.00
emotion regulation	73.57	7.55	74.31	7.91	.44	.00
language	107	11.29	112	12.78	.48	.00
parent support	55.12	9.48	55.3	9.09	.90	.00
parent involvement	51.43	8.82	52.33	9.03	.70	.00
parent communication	48.35	7.64	48.38	7.91	.56	.00
parent autonomy	51.96	8.35	51.69	7.39	.60	.00
extraversion	32.8	10.79	38.03	11.67	-.05	.64
agreeableness	42.82	13.94	43.05	13.66	-.08	.45
conscientiousness	40.62	10.16	38.88	11.33	.06	.58
neuroticism	60.99	10.35	59.03	11.74	.15	.15

that resulted in the largest range of ages was desirable, to promote the generalizability of the analyses. First, a child was chosen from each family on the basis of drawing random numbers. The second method involved assignment of alternating younger and older siblings to the analysis group. Preliminary analyses demonstrated that both methods provided the same range of ages (range = 83 months) and similar mean of ages (counter-balanced: M = 112.50; randomized: M = 112.44). As the method involving assignment of alternating younger and older siblings provided the least opportunity for error in data entry, that method was used to select the child from each family included in the initial analyses. The means and standard deviations for siblings included in the analyses associated with Hypothesis 2 (Experimental group), and those siblings that were not included in the analyses (cross-validation group), are provided in Table 7. Also included in Table 7 are descriptive statistics from previous research. The data for the Emotion Understanding Interview was from a control group (Shipman & Zeman, 1999). Other research utilizing the EUI has reported lower scores (M = 21.40, SD = 2.42) for a normative sample (Shipman et al., 2000). Information for the Emotion Regulation Checklist is not available for comparison purposes; previous research reported information for the two subscales separately (Shields& Cicchetti, 1998; Shipman & Zeman, 2001; Shipman et al, 2000). The data for parenting styles is reported from the PCRI standardization sample (Gerard, 1994). A review of research literature utilizing the CCQ (five-factor model) failed to uncover normative data.

After controlling for differences in ages, correlations for the emotional competence, parenting, and personality measures were computed (see Table 8). Of note, there was a significant negative relationship between extraversion and emotion understanding. In contrast, there were a number of significant relationships between emotion regulation and the independent variables,

Table 7

Comparison of Means and Standard Deviations of Research Variables Between Experimental and Cross-validation Groups, and Previous Research

	Experimental Group		Cross-validation Group		Previous Research	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
emotion understanding	41.99	8.24	42.79	8.02	30.77	3.68
emotion regulation	73.87	7.51	74.01	7.97	n / a	n / a
parent support	54.89	9.34	55.52	9.22	24.02	4.13
parent involvement	51.68	9.33	52.07	8.52	46.22	4.88
parent communication	48.29	7.75	48.45	7.79	29.04	3.59
parent autonomy	51.74	7.70	51.95	8.07	26.22	4.47
extraversion	35.29	12.09	35.54	10.97	n / a	n / a
agreeableness	43.22	13.93	42.73	13.71	n / a	n / a
conscientiousness	39.49	10.68	40.18	11.13	n / a	n / a
neuroticism	60.57	10.66	59.34	11.47	n / a	n / a

Table 8

Partial Correlation Coefficients Between Research Variables Controlling for Child Age

Variable	1	2	3	4	5	6	7	8	9	10
1. emotion understanding	----									
2. emotion regulation	.11	----								
3. parent support	.01	.42*	----							
4. parent involvement	.09	.27*	.32*	----						
5. parent communication	.14	.38*	.27*	.61*	----					
6. parent autonomy	.18	.19	.06	-.05	.17	----				
7. extraversion	.24*	.23*	.08	.33*	.36*	.11	----			
8. agreeableness	.17	.60*	.35*	.08	.22*	.11	.02	----		
9. conscientiousness	.16	.52*	.17	.09	.30*	.31*	-.21*	.23*	----	
10. neuroticism	-.12	.41*	.15	-.05	-.07	-.12	.54*	.00	.39*	----

Note.
* $p < .05$ (two-tailed)

the hierarchical multiple regression analyses, the predictor variable of age was entered prior to the variables associated with parenting and personality. This ordering was selected to account for variance contributed by age before that of the variables of interest.

With emotion regulation as the dependent variable (see Table 9), age did not contribute significantly to the percentage of variance accounted for. The variables that made unique contributions toward predicting positive emotion regulation were variables associated with the children's personality. Specifically, higher levels of agreeableness and conscientiousness, and lower levels of neuroticism were predictive of greater ability to regulate emotions. Agreeableness was most predictive and conscientiousness was least predictive. It was anticipated that characteristics associated with parenting would be predictive of emotion regulation, but this was not supported. With emotion understanding as the dependent variable, (see Table 10), the regression model indicated that age accounted for a significant proportion of the variance associated with the emotion understanding scores. It was anticipated that characteristics associated with both parenting and personality would be predictive of emotion understanding, but this was not supported.

Hypothesis 3: Differential parental interaction with siblings.

The extent to which differential experiences within the family explain variance in emotional competence, independent of child age, was explored. It was expected that differences in siblings' emotional competence will best be accounted for by both parent and child characteristics. Specifically, it was expected that when siblings have similar personalities and experience similar parental behaviours, then the siblings will exhibit similar emotional competence. Alternatively, if siblings have different personalities and experience parental behaviours that are

Table 9

Hierarchical Multiple Regression Predicting Contribution of Parent and Child Characteristics to Emotion Regulation

Step and Predictor variable	R^2	*Adjusted* R^2	ΔR^2	β	sr^2
Step 1	.00	-.01	.00		
age				-.04	.00
Step 2	.63	.59	.63		
parent support				.12	.01
parent involvement				.13	.01
parent communication				.09	.00
parent autonomy				.02	.00
extraversion				.06	.00
agreeableness				-.47*	.18
conscientiousness				-.24*	.04
neuroticism				.31*	.06

*$p < .05$

Table 10

Hierarchical Multiple Regression Predicting Contribution of Parent and Child Characteristics to Emotion Understanding

Step and Predictor variable	R^2	*Adjusted* R^2	ΔR^2	β	sr^2
Step 1	.10	.09	.10		
age				.34*	.10
Step 2	.20	.12	.11		
parent support				-.08	.01
parent involvement				.04	.00
parent communication				-.03	.00
parent autonomy				.13	.01
extraversion				-.24	.03
agreeableness				-.17	.02
conscientiousness				-.06	.00
neuroticism				-.05	.00

*$p < .05$

attuned to each sibling's individual attributes, then it was expected that the siblings will also exhibit positive emotional competence.

First, sibling difference scores for each of the variables was generated. Specifically, one sibling's score was subtracted from the score of the other sibling. Only the absolute value of the sibling difference was used in the analyses. Prior to the main analyses, both criterion and predictive variables were assessed for the influence of sibling pair differences by gender. For the four dyad gender constellations (sisters, brothers, older sister and younger brother, older brother and younger sister), a series of univariate analyses of covariance (ANCOVAS) were conducted separately for each predictor and criterion variable, and age was included as covariate. Main effect was found for emotion understanding only, $F(4, 89) = 4.39, p = .01$.

A pair of hierarchical multiple regression analyses were used to investigate the extent to which differential experiences in the family explain variance in emotional competence, independent of child age. Analyses were executed separately for each measure of emotional competence (i.e., emotion regulation, emotion understanding). For both hierarchical multiple regression analyses, the predictor variable of age was entered prior to the variables associated with parenting and personality. This ordering was selected to account for variance contributed by age before that of the variables of interest. Given the relationship between sibling pair differences and emotion understanding, sibling pair differences will be accounted for in the analysis for emotion understanding only.

With emotion regulation as the dependent variable (see Table 11), age did not contribute significantly to the percentage of variance accounted for. The variables that made unique

Table 11

Hierarchical Multiple Regression Predicting Contribution of Differential Parent and Child Characteristics to Emotion Regulation

Step and Predictor variable	R^2	*Adjusted* R^2	ΔR^2	β	sr^2
Step 1	.01	.00	.01		
age				.05	.00
Step 2	.45	.40	.44		
parent support				-.01	.00
parent involvement				.01	.00
parent communication				.13	.01
parent autonomy				.23*	.05
extraversion				.12	.01
agreeableness				.41*	.14
conscientiousness				.28*	.07
neuroticism				.15	.02

*$p < .05$

contributions toward predicting differences between siblings in positive emotion regulation included agreeableness, conscientiousness, and parental autonomy. Specifically, higher levels of agreeableness and conscientiousness, and greater levels of autonomy from parents were associated with more positive emotion regulation. It was anticipated that other characteristics associated with parenting (e.g., support or communication) would be predictive of emotion regulation, but this was not supported. With emotion understanding as the dependent variable, (see Table 12), the regression model indicated that age was the only variable that accounted for a significant proportion of the variance associated with the emotion understanding scores. Again, it was anticipated that characteristics associated with parenting and personality would be predictive of emotion understanding, but this was not supported.

The relationship between differential parental autonomy allocated to siblings, differential sibling agreeableness and conscientiousness, and differential sibling emotion regulation was investigated further. A series of 2 (personality) x 3 (parental autonomy) analyses of variance (ANOVAS) was conducted on the emotion regulation variable. Analyses were conducted separately for each personality variable (i.e., agreeableness and conscientiousness). Prior to analyses, sibling difference scores for both personality variables and the parenting variable were divided into three groups, to reflect low, moderate or high similarity. Only the groups low and high in sibling similarity for the personality variables were included in the analyses. Main effects were found for both conscientiousness, $F(3, 90) = 2.68$, $p = .05$, and for agreeableness, $F(3, 64) = 4.93$, $p < .01$. The pattern is similar for both agreeableness and conscientiousness conditions. Siblings who differ the most in personality and differ the most in parental autonomy,

Table 12

Hierarchical Multiple Regression Predicting Contribution of Differential Parent and Child Characteristics to Emotion Understanding

Step and Predictor variable	R^2	*Adjusted* R^2	ΔR^2	β	sr^2
Step 1	.10	.08	.10		
age				.34*	.10
sibling gender pair				-.16	.02
Step 2	.19	.09	.09		
parent support				.08	.01
parent involvement				.18	.02
parent communication				.11	.01
parent autonomy				.-.02	.00
extraversion				-.13	.02
agreeableness				.00	.00
conscientiousness				-.12	.01
neuroticism				.06	.00

*$p < .05$

have the most different emotion regulation ability. Siblings who are the most similar in personality and have moderate similarity in autonomy, have the most similar emotion regulation ability. No significant interactions were found between parental autonomy and either personality variable.

Summary of Data Analysis

Preliminary analyses indicated that the only demographic variables that were correlated with emotion regulation or emotion understanding were child gender (both younger and older sibling girls tended to have higher emotion understanding scores), parent gender (mothers tended to score older siblings as having higher emotion regulation scores), and presence of medical history (older siblings with a positive medical history tended to have lower emotion regulation scores). The child's age was related to the younger sibling's emotion understanding scores only but was included in further analyses due to the demonstrated relationship between child age and the independent variable. Language skills were related to emotion understanding scores for the younger sibling only, so this variable was not included in all other analyses. Surprisingly, emotion regulation and emotion understanding were not significantly correlated for either younger or older siblings.

Comparison of the scores for younger and older siblings on all research variables showed significant correlation between emotion regulation scores for younger and older siblings, and for emotion understanding scores for younger and older siblings. Parent ratings of the personalities of younger and older siblings were not correlated. However, characteristics of parenting of siblings were shown to be similar.

When considering differences between families, emotion regulation correlated with parent support, parent involvement, parent communication, extraversion, agreeableness,

conscientiousness, and neuroticism. But a hierarchical regression, with emotion regulation as the dependent variable, indicated that only the child's agreeableness, conscientiousness, and neuroticism made unique contributions toward predicting positive emotion regulation. In contrast, only extraversion was related to emotion understanding. A hierarchical regression, with emotion understanding as the dependent variable, indicated that only the child's age made a unique contribution toward predicting positive emotion understanding.

When considering differences within families, a hierarchical regression with emotion regulation as the dependent variable indicated that differences between siblings in agreeableness, conscientiousness, and parental autonomy made unique contributions toward predicting differences in emotion regulation. A similar analysis, with emotion understanding as the dependent variable, indicated that the only difference between siblings that made a unique contribution toward predicting differences in emotion understanding was the children's age. The relationship between differential sibling personality, differential parental autonomy, and differential emotion regulation was investigated further. Siblings with the greatest differences in personality and greatest differences in parental autonomy were most different in emotion regulation ability, whereas siblings who were most similar in personality but were moderately similar in parental autonomy were the most similar in emotion regulation ability.

CHAPTER IV

DISCUSSION

The present investigation considered whether individual differences in emotional competence can best be accounted for by child characteristics (e.g., temperament/personality, cognitive/language ability, age), parenting characteristics or behaviours (e.g., communication, degree of involvement or autonomy, parental emotional support), or a combination of child and parent characteristics. The results are promising, as data analyses are generally consistent with previous research conducted on sibling differences. The results also provide preliminary evidence for the contribution of both parent and child characteristics to the development of emotion regulation. Unexpectedly, results indicate that factors other than the parent and child characteristics measured in the current study likely also provide significant contributions to the development of emotion understanding. These issues are considered in detail below.

Preliminary Analyses:

Surprisingly, analyses of correlations between research variables revealed that age, for both younger and older siblings, was not significantly correlated with parental report of emotion regulation ability. Further, analyses indicated that the emotion understanding score was related to age for the younger siblings only. Normative expectations are that children become more emotionally competent with age (Saarni, 1999). This unexpected finding may be due to unique characteristics of children in middle childhood. Alternatively, the failure to find a relationship between age and emotion regulation ability may be because the parents in the present study were comparing the child to a sibling, rather than comparing the child with other children the parent knows (Saudino et al., 2003). Further understanding of this surprising result could be attained by

having the parent compare a child to a sibling and to a peer on measures of emotion regulation, while at the same time use an independent measure of emotion regulation for all three children. It is possible that the finding of a relationship between age and score on the emotion understanding task for younger siblings only, may have been due to individual differences other than age.

Other preliminary analyses indicated age-related differences in personality for both younger and older siblings. Younger siblings were rated by their parents as being more neurotic as the child's age increased, and older siblings were rated as being less neurotic as their ages increased. Only the younger siblings were rated as less extraverted as the child's age increased. Most surprisingly, the only parenting variable related to age was parental involvement, such that parents reported being more involved with older siblings as the child's age increased. Age-related differences in parenting characteristics may be more relevant for younger children (e.g., preschoolers) and may not pertain to children in middle childhood.

Investigation of the influence of demographic variables on the criterion variables revealed a couple of findings of note. First, a relationship was found between child gender and scores on the emotion understanding task for both younger and older siblings. On this task, girls tended to have higher scores. Gender was not related to scores on the emotion regulation task for either the younger or older siblings. Secondly, scores on the measure of language were related to scores on the emotion understanding task, but for the younger sibling only. It is important to note that the language task was intended primarily as a screening measure and assessed only receptive language skills; results may have been magnified had global language skills (comprehension, reasoning, and expression) been measured. The relationship between language ability and emotional competence

has been well-documented (Dunn et al., 1987; Pons et al., 2003; Saarni, 1993). In summary, gender, language ability, and age were all related to scores on the emotion understanding task.

Given the finding of correlation between age, language ability, and score on the emotion understanding task, younger children may have been adversely influenced by language demands of the task. It is unlikely that language ability is related to emotion understanding for younger children only. Rather it is more likely that a minimal level of linguistic skill is necessary to complete this task (e.g., average skills for children at age 7), and once that skill is achieved (as it would be for most older siblings in this study) then the task is assessing emotion understanding instead of emotion understanding and language skill. Qualitatively, there were readily apparent differences between older and younger children on the emotion understanding task. Generally, the younger children often responded in monosyllables, did not elaborate on answers, and were unable to answer some questions (e.g., about feelings in others). Also, older children's answers tended to reflect their experiences. For example, if children were asked "If your mom saw you looking this way (afraid), how would she feel?" answers included;

"might be scared too if a really scary thing that not even my mom can do."(6 years, 6 months);

"she'd feel bad for me, doesn't feel so good for the other person" (6 years, 2 months);

"she'd feel worried if she saw that I was scared" (12 years, 6 months);

"feel scared for me because I was scared of something" (11 years, 10 months).

If children were asked, "If your dad saw you looking this way (afraid), how would he feel?" answers included;

"probably wouldn't be scared, might be fine" (6 years, 6 months)

"worried and confused cause if he knew I was scared of something he would be worried cause he doesn't like seeing me scared" (11 years, 9 months)

If children were asked, "Let's pretend you saw another kid looking this way (afraid). Why do you think he / she might be looking like that?" answers included;

"probably saw the boogeyman" (6 years)

"probably somebody told them they were gonna fail" (12 years, 7 months)

If children were asked, "When you feel this way (afraid), do you show it? Let other people see how you feel?" answers included;

"no, just walk away" (6 years, 5 months)

(12 year olds almost always acknowledged they show how they feel)

If children were asked "If you saw another kid looking this way (afraid), how would you feel?" answers included;

"maybe sorry for them that they were scared a bit" (11 years, 11 months)

"feel worried because something might really be the matter" (12 years, 6 months)

Finally, when one child was asked "If you saw another kid looking this way (happy), how would you feel?" the child replied "Glad because sometimes when I see other people happy it cheers me up (11 years, 9 months).

As previously noted, gender and language ability were correlated with emotion understanding scores. It is possible, at least for the younger siblings, that scores on the emotion understanding task were confounded. Although analyses failed to find a relationship between gender and language development in the present study, previous research has demonstrated gender differences in language development (Brody & Hall, 1993). Failure to find a relationship

between gender and language ability in the present study may be due to limitations in the measure utilized. Despite the failures associated with the current study, gender differences associated with the emotion understanding task may be language based.

Further analyses revealed that differences in parent gender were related to parental report of emotion regulation ability for older siblings only. Specifically, mothers were more likely to report higher scores than were fathers. This finding may be a statistical artifact, related to the few father participants. Alternatively, this finding may reflect that, as children get older, they are more likely to regulate emotions in the presence of their mother than in the presence of their father.

Another finding indicated that the presence of a history of factors related to emotional competence (e.g., head injury, diagnosis of a psychiatric disorder) was related to scores on the emotion regulation scale, but for older siblings only. Due to the low number of participants in some categories, this finding may be a statistical artifact. This pattern may suggest an interactional nature to these influences on the development of emotional competence, such that the presence of these factors impairs parent-child interactions that are critical to the development of emotional competence (Smith & Walden, 2001; Thompson, 1991).

Surprisingly, scores on measures of emotion regulation and emotion understanding were not significantly correlated for both younger and older siblings. There are a number of possible explanations for this finding. First, given that these tasks were completed by different informants, results might reflect differences between respondents or a response bias by one of the informants. Another possible explanation is that the tasks are measuring two distinct aspects of emotional development. Specifically, one task measures understanding where the other task measures competence. Alternatively, it is possible that this finding reflects a lack of real correlation between

emotion regulation and emotion competence. Much research that has investigated emotional functioning with adults has utilized composite measures that encompassed multiple aspects of emotion (Buckley et al., 2003; Fukunishi et al., 2001; Salovey & Mayer, 1990; Sifneos, 1991). Much research that investigates emotional development (i.e., with children) utilizes measures of specific aspects of emotional development (Denham, 1998; Lewis, 2000). It is possible that, as with other aspects of human functioning, one aspect of emotional development is integration of various aspects of emotional functioning. It would be helpful to look at this question further from an age-span perspective to see if there are developmental differences in how these constructs are related. Further, emotional competence has been conceptualized as being multi-dimensional in nature, and these tasks were chosen to represent different aspects of emotional competence. The results suggest that emotional competence, as defined, is multi-dimensional in nature and that the measures utilized in this investigation evaluated different aspects of emotional competence (Eisenberg et al., 1998). The present investigation underscores the need for multi-measure, multi-informant measurement when investigating emotional competence, particularly in middle childhood. Further investigation is needed to tease out whether these two constructs are related and, if there is a true lack of correlation between the constructs, potential reasons underlying the lack of relationship.

Hypothesis 1: Sibling Differences.

A primary goal of this research was to compare siblings on measures associated with emotional competence. Consistent with previous research, there was little resemblance between parent ratings of the personality characteristics of younger and older siblings for any of the domains assessed (Daniels, 1986). Specifically, the sibling pairs were no more alike than unrelated

pairs. As well, the siblings were moderately similar in their language ability. In contrast with previously published research, parents reported significant similarity in their parenting between siblings on all aspects investigated (Dunn et al., 1990; Kowal & Kramer, 1997; McGuire et al., 1995; McHale et al., 1995). Thus, although parents are reporting that their children are dissimilar in nature, the children are being parented in a similar manner. Further, comparison of the criterion variables showed significant correlations between emotion regulation scores and emotion understanding scores for both younger and older siblings. It is important to note that the ratings of the siblings' emotion regulation ability were significantly correlated, but the ratings of siblings' personality characteristics were dissimilar, despite the fact that items for the emotion regulation scale were derived from the scale used to assess personality characteristics (Shields & Cicchetti, 1997; Shields and Cicchetti, 1998). This finding rates further investigation. Additionally, the finding of similarity between sibling scores on measures of emotion understanding and emotion regulation may have been related to the use of a normative population. Results may have differed had the families been recruited from a different population, such as families for which one child has been referred to a Children's Mental Health Centre.

Hypothesis 2: Contribution of parent and child characteristics to emotional competence.

When considering differences between families, it was expected that there would be a link between parent and child characteristics that have been previously identified as contributing to emotional competence. Parental support, involvement, communication, and personality characteristics of extraversion, agreeableness, conscientiousness, and neuroticism were all correlated with emotion regulation. Surprisingly, a hierarchical regression, with emotion regulation as the criterion, indicated that only children's agreeableness, conscientiousness, and

neuroticism made unique contributions toward predicting positive emotion regulation. Specifically, children who were more agreeable, more conscientious and less neurotic were reported by parents as being better able to regulate emotions. Thus, results indicate that parenting characteristics did not make a unique contribution, beyond temperament, to emotion regulation, contrary to previous research (Boyle et al., 2004; Dunn et al., 1990; Feinberg & Hetherington, 2001). Previous research has documented that certain parenting characteristics are related to emotional competence. This study supports those findings, in that all parenting characteristics except autonomy were correlated with emotion regulation, but goes on to indicate that only children's personality characteristics made unique contributions toward predicting positive emotion regulation. It is possible that, in the current study, there was lack of variance between parents in the characteristics assessed. Lack of variance would reduce the statistical likelihood of the possibility of parenting characteristics contributing to emotion regulation. Another possibility is that the findings are connected to the relationship between the two measures. Specifically, the items for the emotion regulation scale were derived from the questionnaire used to assess personality. Te overlap in items would be expected to increase the likelihood of finding a relationship between the two measures. To better answer this question it may be helpful in future research to utilize independent measures of emotion regulation and child personality.

Different results were evident when emotion understanding was the criterion. In this instance, preliminary analysis indicated that extraversion was the only predictor related to emotion understanding. It is possible that extroverted children were better conveying their understanding of emotion in the interview format. A hierarchical regression, with emotion understanding as the criterion, indicated that only the child's age made a unique contribution toward predicting positive

emotion understanding. No parenting characteristics were identified as making a unique contribution to differences between families in children's understanding of emotions.

Hypothesis 3: Differential parental interaction with siblings.

When considering differences within families, a hierarchical regression with emotion regulation as the criterion, indicated that differences between siblings in agreeableness, conscientiousness, and parental autonomy made unique contributions toward predicting differences in emotion regulation. As was expected, and consistent with previous research, both parenting and child characteristics make unique contributions to differences between siblings in their emotion regulation ability (Brody et al., 1992; Saudino et al, 2003; Sorbring et al., 2003; Tamrouti-Makkink et al., 2004; Tucker et al., 2003). Neuroticism did not make a unique contribution toward predicting differences within families. In this case, differences in the parent's self-reported promotion of the child's independence (autonomy) made a unique contribution. This finding demonstrates the importance of looking within families when considering factors contributing to emotional competence.

A similar analysis, with emotion understanding as the criterion, indicated that the only difference between siblings that made a unique contribution toward predicting differences in emotion understanding was the siblings' age. This finding is similar to that found when considering differences across families, and merits further investigation. It may not be entirely unexpected that children's personality is unrelated to their understanding of emotion, but given the previous finding of the importance of the parent-child interaction to children's emotional development, it is expected that parenting characteristics would be related (Eisenberg et al., 1998;

Gottman et al., 1997; Shaw et al., 1998). Again, it was unexpected that age made a significant contribution to the solution for emotion understanding but not emotion regulation.

The relationship between differential sibling personality, differential parental autonomy, and differential emotion regulation was investigated. Not unexpectedly, siblings with the greatest differences in personality and greatest differences in parental autonomy were most different in emotion regulation ability. Somewhat surprisingly, siblings who were most similar in personality but were moderately similar in parental autonomy were the most similar in emotion regulation ability. It is likely that provision of parental autonomy is dependent on factors in addition to personality. For example, it would be expected that differences in sibling age would influence provision of autonomy by parents.

Limitations

The limited unique contribution of parenting characteristics to the ratings of emotional competence in this study was unexpected given the importance of parenting characteristics in previous research (Eisenberg et al., 1998; Gottman et al., 1997; Shaw et al., 1998). It is possible that the measure of parenting characteristics utilized in this research was inappropriate, that the measure chosen was insensitive or inadequate to capture differences within families, or that other parenting characteristics are more important to the development of emotion understanding. These characteristics may include parental meta-emotion philosophy, parent knowledge of emotion or facility with emotional events, child-centeredness of the parent, or parental beliefs about children's behaviours. It is possible that another, previously un-investigated variable, is a better predictor of children's understanding of emotion. For example, Putnam and colleagues (2002) reported that prior research has found mixed results when looking for associations between temperament and

parenting. It was suggested that failure to find an effect may be due to an intervening variable such as age (e.g., parenting of particular temperaments changes with time), gender (e.g., parenting of gender by temperament interactions), parental characteristics (e.g., personality or psychiatric status), or social and cultural factors (e.g., parental perception of social support).

Another explanation for the limited support for the hypotheses may be due to failure to accurately identify the nature of the link between child personality, parenting, and emotional competence. Consistent with the present study, Gallagher (2002) suggested that temperament is a source of differential susceptibility to parenting and has proposed that child temperament moderates the influence of parenting on the criterion. A path analytic approach would be necessary to investigate the factors influencing the relationship between parenting and temperament. The relatively small sample size of the current investigation, does not allow the author to detect and explore other analytic strategies. Further, the limited statistical power of the current investigation did not allow for exploration of the influence of demographic variables in the hierarchical regressions. Future research, conducted with larger and more differentiated samples would be better able to answer the questions posed.

Other avenues of research that should be explored include the influence of both parents on the development of children's emotional competence. This study allowed for participation by only one parent, and did not restrict participation to intact families. Recent research has demonstrated that both parents contribute significantly, but differently, to children's emotional development (Bogels & van Melick, 2004; McDowell et all, 2002). Research has also shown the influence of an older sibling's emotional competence on a younger sibling's emotional competence, beyond the

contribution of parenting (Brody, Kim, Murry, & Brown, 2003). With a larger sample size, the influence of both parents and the older sibling's abilities could be explored.

Saudino and her colleagues (2003) found differences between parental and objective ratings of temperament between siblings. The siblings were rated as being more different when rated by parents than when rated by objective method. It was suggested that parents are subject to contrast effects when rating siblings, such that the parent is comparing the child being rated to other children the parent knows best (such as siblings). The current study did not allow for independent observations of the children's emotion regulation and personality; all information was provided by one parent. It may be more useful in future to include ratings by teachers or other independent raters of emotional competence. Alternatively, children's emotional competence could be assessed through observation in the context of an emotionally arousing situation.

This study also did not allow for examination of the role of sibling relationship quality in the development of children's emotion competence. As noted previously, social interactions strongly influence children's emotional competence (Denham, 1998; Saarni, 1999). Research to date has emphasized the role of parents in various aspects of child development. Family systems theory emphasizes the influence of all family members on the development of other members of the family. In the present study, the moderate correlation between siblings in emotion regulation and emotion understanding ability, with limited influence of parenting characteristics, suggests a fruitful direction for future research.

On a practical level, preliminary analyses indicated that age was related with emotion understanding for the younger siblings only, yet both heirarchical regression analyses with emotion understanding as the criterion indicated that age was the only significant predictor of

emotion understanding both between and within families. Research results might have been different if research participation had been restricted to children over 7 years of age.

Future Directions

There are numerous directions for future research. First, it will be important to clarify questions raised regarding measures utilized in the present study. Specifically, the current study indicated relationships between, gender, age, and language ability with respect to emotion understanding. It may be useful in future studies to use a more global measure of language and to include language ability in all analyses, instead of using measures of language to screen participants (Bohnert et al., 2003). Despite the fact that items for the emotion regulation scale were derived from the scale used to assess personality characteristics, the ratings of the siblings' emotion regulation ability were significantly correlated, but the ratings of siblings' personality characteristics were dissimilar (Shields & Cicchetti, 1997; Shields and Cicchetti, 1998). This finding rates further investigation. It will also be important to consider further the relationship between the emotional competence measures, and investigate whether differences are due to respondent, measure, or a combination of both factors.

It may be fruitful for future research to explore the factors that contribute to the development of emotion understanding of children in middle childhood. Specifically, the current study identified age-related effects on emotion understanding, parenting characteristics, and children's personality. The present investigation also raised questions about the relationship between various aspect of emotional competence. This issue would likely benefit from future research utilizing an age-span perspective to see if there are developmental differences in how

these constructs are related. In sum, future investigations may need to look more closely at trends across the age-span of middle childhood.

Another important direction for future research is in the contribution of parenting characteristics to the development of emotional competence. Specifically, the current study allowed for only one parent to participate. It is possible that two parents may have disparate parenting beliefs and behaviours. Consequently, it would be worthwhile to consider the effect of differential parental behaviours on the development of emotional competence in middle childhood. It may also worthwhile to consider whether the influence of parental behaviours is related to the relative amount of time each parent spends with the child. In addition, it may be worthwhile to investigate parenting characteristics (e.g., parental meta-emotion philosophy, parent knowledge of emotion or facility with emotional events, child-centeredness of the parent, or parental beliefs about children's behaviours) that were not assessed in the present study.

Finally, the current study considered the influence of parent and child characteristics on emotional development in a normative sample. Much of the research literature that investigates emotional development compares well-regulated versus maladjusted samples (Shields & Cicchetti, 1998). It is possible that the current study failed to realize expected effects due to lack of variability in the sample. Extension of the current investigation to a clinical sample may demonstrate hypotheses in the expected direction.

Summary

This investigation has provided additional support for previous research conducted on sibling differences. The study also provides preliminary evidence for the contribution of both parent and child characteristics to the development of emotion regulation. Unexpectedly, results

indicate that factors other than the parent and child characteristics explored in the present investigation provide unique contributions to the development of emotion understanding. Much more work is needed before definitive statements may be made regarding the relationship between parenting characteristics and child characteristics in the development of emotional competence.

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Appendix A

Background Information

Number _____

Please complete the following questions to provide us with general information about your household and your child. All information is strictly confidential and will only be identified by number in our files, not by name.

About you and your household

Date of Birth (Day / Month / Year): ___ / ___ / ___ Age (Years): _____

Gender: Male Female

Which cultural or ethnic group(s) do you identify with?
American/Canadian Indian or Alaska native Asian Hispanic or Latino
Native Hawaiian or other Pacific Islander White
Black or African American/Canadian Arabic or Middle Eastern
Other: _____

Which of the following best describes your level of education?
some high school completed high school some college or university
completed college or university post-graduate degree

What is your current occupation (please be specific)? _____

Please list all your children from oldest to youngest.
Age Birth Date Gender
_____
_____
_____
_____
_____
_____
_____

Do your children live in a: one parent home two parent home

Which of the following best describes your relationship with these children?
biological parent step-parent adoptive parent legal guardian other:_____

Older Child Participant

Date of Birth (Day / Month / Year): ___ / ___ / ___ Age (Years / Months): ___ / ___

Gender: Male Female

Has your child ever received medical attention or lost consciousness following a head injury?

Yes No

If so, how old was your child at the time of the head injury (Years / Months): ___ / ___

Briefly describe the outcome of the head injury: _____

_____

Has your child ever been diagnosed with brain infections, epilepsy, or ongoing health concerns?

Yes No

If so, provide details of diagnosis: _____

_____

Has your child ever been diagnosed or treated for a psychiatric or psychological disorder?

Yes No

If so, provide details of diagnosis: _____

_____

Has your child ever been prescribed medication for any reason other than physical illness? (For example: behaviour problems, difficulty paying attention, etc.)

Yes No

If so, specify the medication, when it was prescribed, how long it was prescribed, and why it was prescribed: _____

_____

Younger Child Participant

Date of Birth (Day / Month / Year): ___ / ___ / ___ Age (Years / Months): ___ / ___

Gender: Male Female

Has your child ever received medical attention or lost consciousness following a head injury?

Yes No

If so, how old was your child at the time of the head injury (Years / Months): ___ / ___

Briefly describe the outcome of the head injury: _____

_____

Has your child ever been diagnosed with brain infections, epilepsy, or ongoing health concerns?

Yes No

If so, provide details of diagnosis: _____

_____

Has your child ever been diagnosed or treated for a psychiatric or psychological disorder?

Yes No

If so, provide details of diagnosis: _____

_____

Has your child ever been prescribed medication for any reason other than physical illness? (For example: behaviour problems, difficulty paying attention, etc.)

Yes No

If so, specify the medication, when it was prescribed, how long it was prescribed, and why it was prescribed: _____

_____

Appendix B

California Child Q-Set (common-language version)
(Caspi, Block, Block, Klopp, Lynam, Moffit et al., 1992)

1. Shows thoughts and feelings in the way s/he looks and acts, but does not talk much about what s/he thinks and feels.
2. Is considerate and thoughtful of others.
3. Is a warm person and responds with kindness to others.
4. Gets along well with others.
5. Is admired by others.
6. Is helpful and cooperates with others.
7. Likes physical affection (For example, likes to hug or be held)
8. Likes to keep thoughts and feelings to self.
9. Makes good and close friendships with others.
10. Friends don't last long; changes friends a lot.
11. Tries to blame to others for things s/he has done.
12. Starts to act immature when s/he faces difficult problems or when s/he is under stress. (For example, whines or has tantrums.)
13. Tries to see what and how much s/he can get away with. Usually pushes limits and tries to stretch the rules.
14. Is eager to please others.
15. Shows concern about what's right and what's wrong. (For example, s/he tries to be fair.)
16. Is proud of the thing's s/he's done and made.
17. Acts very masculine.
18. Lets others know it when s/he's upset or angry. Doesn't hold back feelings when feels upset or angry with others.
19. Is open and straightforward.
20. Tries to take advantage of other people.
21. Tries to be the center of attention.
22. Tries to get others to do what s/he wants by playing up to them. Acts charming in order to get own way.
23. Is nervous and fearful.
24. Worries about things for a long time.
25. Thinks things out and you can explain things to him/her like you can to a grown up.
26. Is physically active. Enjoys playing, running, and exercise.
27. Looks different from other kids her/his own age.
28. Is energetic and full of life.
29. Is protective of others. Protects people who are close to him/her.
30. Most adults seem to like her/him.
31. Is able to see how others feel; can put him/herself in their place.
32. Gives, lends, and shares things.
33. Cries easily.
34. Is restless and fidgety; has a hard time sitting still.
35. Holds things in. Has a hard time expressing her/himself; is a little bit uptight.

36. Finds ways to make things happen and get things done.
37. Likes to compete; is always testing and comparing him/herself to others.
38. Has an unusual way of thinking about things - for better or for worse, puts things together in her/his head in a different way than other people would.
39. Freezes up when things are stressful, or else s/he keeps doing the same thing over and over.
40. Is curious and exploring; likes to learn and experience new things.
41. Is determined in what s/he does; does not give up easily.
42. Is an interesting, arresting child.
43. Can bounce back or recover after a stressful or bad experience.
44. When in conflict, tends to give in.
45. Tends to withdraw when under stress.
46. Tends to go to pieces under stress; gets rattled when things are tough.
47. Has high standards for him/herself. Needs to do very well in the things s/he does.
48. Needs to have people tell her/him that s/he's doing well or ok. Is not very sure of her/himself.
49. Has specific habits or patterns of behaviour. (For example, s/he taps fingers, bites fingernails, stutters or bites lips.)
50. Tends to get sick when things go wrong or when there is a lot of stress. (For example, gets headaches, stomach aches, throws up.)
51. Is well-coordinated. (For example, does well in sports.)
52. Is careful not to get hurt (physically).
53. Has a hard time making up his/her mind; changes his/her mind a lot.
54. Moods are unpredictable; change often and quickly.
55. Worries about not getting own share of toys, food, or love. Seems afraid s/he won't get enough.
56. Is jealous and envious; wants what other people have.
57. Exaggerates about things that happen to him/her; blows things out of proportion.
58. Openly shows the way s/he feels, whether it's good or bad. Shows emotions openly.
59. Is neat and orderly in the way s/he dresses and acts.
60. Gets nervous if s/he's not sure what's going to happen or when it's not clear what s/he's supposed to do.
61. Tends to be judgemental of other's behaviour.
62. Is obedient and does what s/he is told.
63. Is fast-paced; moves and reacts to things quickly.
64. Is calm and relaxed; easy-going.
65. When s/he wants something, s/he wants it right away. Has a hard time waiting for things s/he wants and likes.
66. Pays attention well and can concentrate on things.
67. Plans things ahead; thinks before s/he does something. "Looks before s/he leaps."
68. Is a very smart kid (even though his/her grades in school might not show this).
69. Has a way with words; can express her/himself well with words.
70. Daydreams; s/he often gets lost in thought or a fantasy world.
71. Often asks grown-ups for help and advice.

72. Has a readiness to feel guilty.
73. Has a sense of humour - likes to laugh at funny things.
74. Usually gets wrapped up in what s/he's doing.
75. Is cheerful.
76. Can be trusted; is reliable, and dependable.
77. Feels unworthy; has a low opinion of himself.
78. Feelings get hurt easily if s/he is made fun of or criticized.
79. Is suspicious - doesn't really trust other people.
80. Teases and picks on other kids (including own brothers and sisters).
81. Can talk about unpleasant things that have happened to him/her.
82. Is self-assertive.
83. Seeks to be independent / autonomous.
84. Is a talkative child; s/he talks a lot.
85. Is aggressive. (For example, s/he picks fights or starts arguments.)
86. Likes to be by him/herself; enjoys doing things alone.
87. Tries to copy and act like the people s/he admires and looks up to.
88. Is self-confident and sure of her/himself; makes up her/his own mind on her/his own.
89. Is able to do many things well; is skillful.
90. Is stubborn.
91. His/her emotions don't seem to fit the situation. (For example, s/he either over-reacts, doesn't seem to care, or sometimes his/her reactions just don't make sense.)
92. Is physically attractive.
93. Is bossy and likes to dominate other people.
94. Whines or pouts often.
95. Let's little problems get to her/him and s/he is easily upset. It doesn't take much to get her/him irritated or mad.
96. Is creative in the way s/he looks at things; the way s/he thinks, works, or plays is very creative.
97. Likes to dream up fantasies; has a good imagination.
98. Is shy; has a hard time getting to know people.
99. Thinks about his/her actions and behaviours; uses his/her head before doing or saying something.
100. Other kids often pick on her/him; is also often blamed for things s/he didn't do.

Extraversion versus social inhibition scale (9 items)
Items 28, 58, 63, 84, and (reverse scored) 1, 8, 35, 86, and 98.
Agreeableness versus antagonism scale (13 items)
Items 2, 3, 4, 6, 9, 14, 29, 30, 32, and (reverse scored) 22, 80, 90, and 93.
Conscientiousness versus lack of direction (9 items)
Items 36, 41, 47, 59, 66, 67, 76, 89, and 99.
Neuroticism versus emotional stability (10 items)
Items 23, 24, 39, 46, 48, 50, 60, 77, 78, and (reverse scored) 43.

Appendix C

Emotion Understanding Interview (Cassidy, Parke, Butkovsky, & Braungart, 1992)
(Photographs printed with permission from K. Shipman, University of Georgia)

Identification

1. How do you think this kid is feeling?

Emotional Experience

2. Do you ever feel like this?
3. Do you ever feel this way when you're with any of the kids at school?

Causes of Emotion

4. What kinds of things make you feel this way?
5. Can you give me an example of a time you felt this way? (Then what happened?)
6. Let's pretend you saw another kid looking this way. Why do you think he/she might be looking like that?

Emotional Expression

7. When you feel this way, do you show it, let other people see how you feel?
8. If you felt this way, would you let your mom see you looking like this?
9. If you felt this way, would you let your dad see you looking like this?

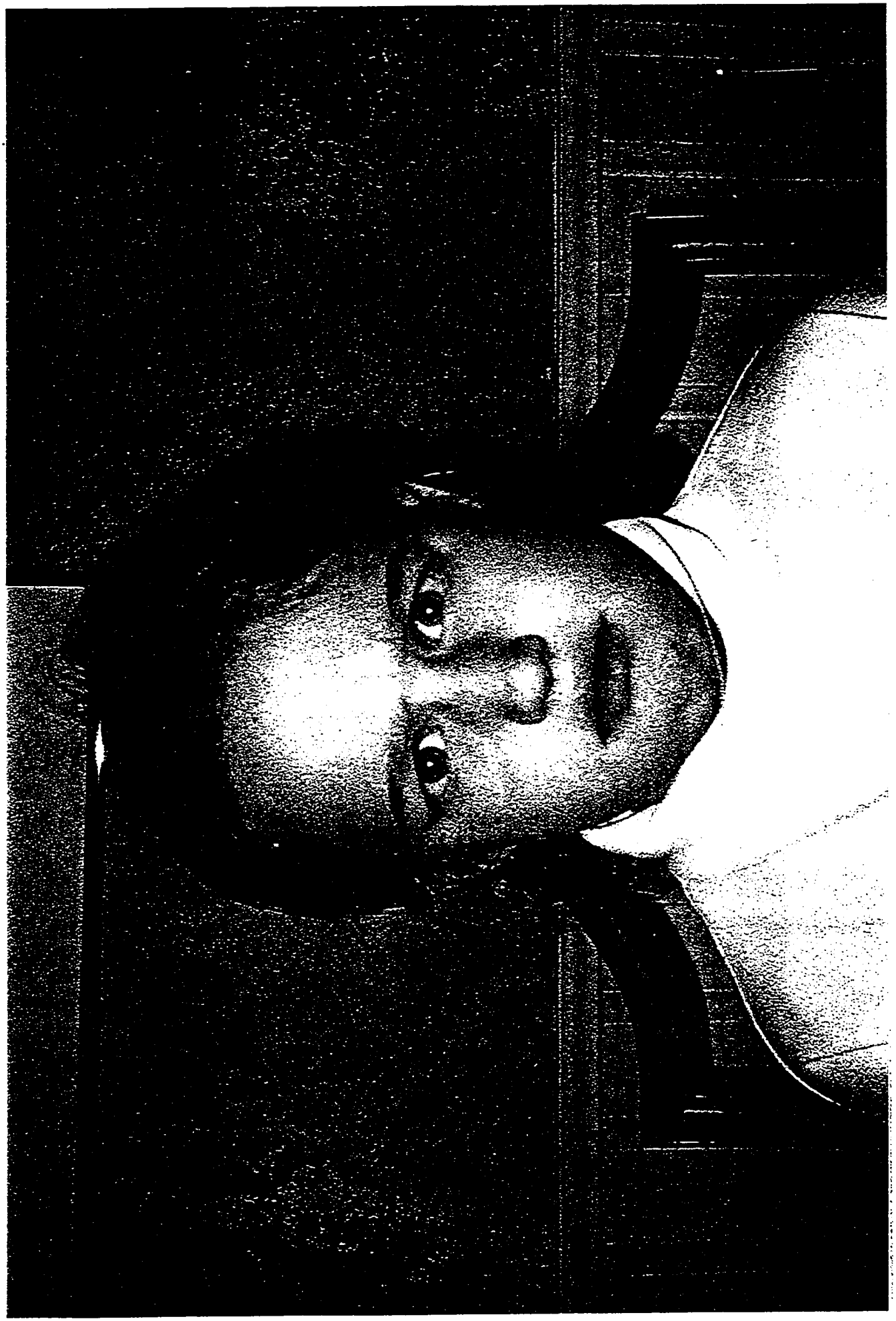
Action Response

10. If your mom saw you looking this way, what would she do?
11. If your dad saw you looking this way, what would he do?
12. If you saw another kid looking this way, what would you do?

Feeling Response

13. If your mom saw you looking this way, how would she feel?
14. If your dad saw you looking this way, how would he feel?
15. If you saw another kid looking this way, how would you feel?

Note. - Questions are asked in the following order, 1, 2, 4, 7, 8, 10, 13, 9, 11, 14, 5, 3, 6, 15, 12



Appendix D

Emotion Regulation Checklist (Shields & Cicchetti, 1997)

Listed below are some sentences that may describe your child. Read each sentence carefully and decide how much you think the sentence is true of your child. Indicate your choice by circling the number in the appropriate column to the right of each sentence.

	Never	Sometimes	Often	Almost Always
1. Is a cheerful child.	1	2	3	4
2. Exhibits wide mood swings (s/he moves quickly from positive to negative moods).	1	2	3	4
3. Responds positively to neutral or friendly overtures by adults.	1	2	3	4
4. Transitions well from one activity to another; does not become anxious, angry, distressed or overly excited when moving from one activity to another.	1	2	3	4
5. Can recover quickly from episodes of upset or distress (for example, does not pout or remain sullen, anxious or sad after emotionally distressing events).	1	2	3	4
6. Is easily frustrated.	1	2	3	4
7. Responds positively to neutral or friendly overtures by peers.	1	2	3	4
8. Is prone to angry outbursts / tantrums easily.	1	2	3	4
9. Is able to delay gratification.	1	2	3	4
10. Takes pleasure in the distress of others (for example, laughs when another person gets hurt or punished; enjoys teasing others).	1	2	3	4
11. Can modulate excitement in emotionally arousing situations (for example, does not get 'carried away' in high-energy play situations, or overly excited in inappropriate contexts).	1	2	3	4
12. Is whiny or clingy with adults.	1	2	3	4
13. Is prone to disruptive outbursts of energy and exuberance.	1	2	3	4
14. Responds angrily to limit-setting by adults.	1	2	3	4
15. Can say when s/he is feeling sad, angry, or mad, fearful, or afraid.	1	2	3	4
16. Seems sad or listless.	1	2	3	4
17. Is overly exuberant when attempting to engage others in play.	1	2	3	4

	Never	Sometimes	Often	Almost Always
18. Displays flat affect (expression is vacant and inexpressive; child seems emotionally absent).	1	2	3	4
19. Responds negatively to neutral or friendly overtures by peers (for example, may speak in an angry tone of voice or respond fearfully).	1	2	3	4
20. Is impulsive.	1	2	3	4
21. Is empathic towards others; shows concern when others are upset or distressed.	1	2	3	4
22. Displays exuberance that others find intrusive or disruptive.	1	2	3	4
23. Displays appropriate negative emotions (anger, fear, frustration, distress) in response to hostile, aggressive, or intrusive acts by peers.	1	2	3	4
24. Displays negative emotions when attempting to engage others in play.	1	2	3	4

Lability/Negativity subscale
Items 2, 6, 8, 10, 13, 14, 17, 19, 20, 22, 24, and (reverse scored) 4, 5, 9, and 11. Higher scores reflect greater dysregulation.

Emotion Regulation subscale
Items 1, 3, 7, 15, 21, and 23, and (reverse scored) 16, and 18. Higher scores reflect greater regulation.

Appendix E
Recruitment Forms

UNIVERSITY OF
WINDSOR

Emotional Competence in Siblings
Psychology Department, University of Windsor
Catharine Lee, M.A.

Families, with at least two children between six and twelve years of age, are invited to participate in a research study.

Description of the study
This study is interested in how similar or different siblings are in the ability to understand and manage emotions, and what kinds of things contribute to similarities or differences between sibling abilities. This will help researchers to better understand individual differences in the development of emotional competence.

Participation will involve meeting with a researcher for approximately 2 hours at either the Child Study Centre at the University of Windsor or at your home. During that meeting, you will be asked to complete questionnaires about your household, your relationship with your children, and your children's behaviour. At the same time, your children will be asked to participate in tasks that evaluate language skills and their understanding of emotions. All participants are free to ask questions before, during, and after participation. You or your children may withdraw at any time during the study.

Risks and possible benefits
Participating in this study might not directly benefit you, but we might learn things that will benefit others. It could be interesting for you and your family to learn about how research in psychology is conducted at the University of Windsor. Completing the questionnaires may cause you to think about things you have not considered before. There are no risks posed by this study that would put you or your family in danger. There are no physical procedures (e.g., medicines administered or wires attached to you) involved in this research. Following the research study, if you wish, you will be invited to attend two seminars. The first seminar will address sibling relationships, and the second will address how to enhance children's emotional development.

Confidentiality
Research participation will be confidential, within legal and ethical limits. Names will not be recorded on the questionnaires; participants will be assigned numbers which cannot be traced to their names. All records of study participation will be kept in a secure location and only the researchers will see them.

Questions or problems
If you have any questions about this research, please contact Catharine Lee, or her supervisor Dr. Sylvia Voelker, at (5 1.

Additional information is available at www.uwindsor.ca/users/c/clee/main.nsf.

Are you interested in learning more about your children's emotional development?

Families with at least two children between 6 and 12 years of age are invited to participate in a research study conducted through the University of Windsor.

Participation involves meeting with a researcher for approximately two hours; the parent will complete questionnaires and both children will be interviewed. To benefit the parent, feedback will be provided about the children's language skills and understanding of emotions. Any information that is obtained in connection with this study is confidential.

For more information, visit the web-page at www.uwindsor.ca/users/c/clee/main.nsf. Interested parents can leave a message for Catharine Lee at 253-3000, ext. 2217, or

Appendix F
Consent Form

UNIVERSITY OF
WINDSOR

CONSENT TO PARTICIPATE IN RESEARCH
Emotional Competence in Siblings

You are asked to participate in a research study conducted by Catharine Lee, from the Department of Psychology at the University of Windsor. The results will be contributed to a doctoral dissertation.

If you have any questions or concerns about the research, please feel to contact Catharine Lee (Ph.D. student) at (519) 253-3000, ext. 2217 or lee123b@uwindsor.ca, or her supervisor Dr. Sylvia Voelker at (519) 253-3000, ext. 2249.

- **PURPOSE OF THE STUDY**

This study investigates how similar or different children in the same family are in the ability to understand and manage emotions, and what kinds of things contribute to similarities or differences between sibling abilities. This will help researchers to better understand individual differences in the development of emotional competence.

- **PROCEDURES**

If you volunteer to participate in this study, we would ask you to do the following things:
Participation will involve meeting with a researcher for approximately 2 hours at either the Child Study Centre at the University of Windsor or at your home. During that meeting, you will be asked to complete questionnaires about your household, your relationship with your children, and your children's behaviour. At the same time, your children will be asked to participate in tasks that evaluate language skills and their understanding of emotions. All participants are free to ask questions before, during, and after participation. Research findings will be available at www.uwindsor.ca/users/c/clee/main.nsf following completion of the project.

- **POTENTIAL RISKS AND DISCOMFORTS**

There are no risks posed by this study that would put you or your family in danger. There are no physical procedures (e.g., medicines administered or wires attached to you) involved in this research. If you or your child appears uncomfortable, the researcher will pause for a break. If you or your child continues to have difficulty, the researcher will discontinue participation.

- **POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY**

Participating in this study might not directly benefit you, but we might learn things that will benefit others. It could be interesting for you and your family to learn about how research in psychology is conducted at the University of Windsor. Completing the questionnaires may cause you to think about things you have not considered before.

- **PAYMENT FOR PARTICIPATION**

You will not receive payment for participating in this research. With your permission, your children will receive a small token of appreciation for their participation. You are invited to attend two seminars, that will be scheduled

following completion of this study. The first seminar will address sibling relationships, and the second will address how to enhance children's emotional development. For notification of the seminar dates, you may either provide us with your name and address and we will send you the seminar dates and times following completion of this study, or you may access that information at www.uwindsor.ca/users/c/clee.nsf.

- **CONFIDENTIALITY**

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission.

Names will not be recorded on the questionnaires; participants will be assigned numbers which cannot be traced to their names. All records of study participation will be kept in a secure location and only the researchers will see them. In the unlikely event that you or your children disclose evidence of harm to self or others, confidentiality will be broken.

□ Check here if you agree to have your data used in subsequent studies. You may withdraw it from subsequent use.

PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may exercise the option of removing your data from the study. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. This study has been reviewed and received ethics clearance through the University of Windsor Research Ethics Board. If you have questions regarding your rights as a research subject, contact:

Research Ethics Co-ordinator
University of Windsor
Windsor, Ontario
N9B 3P4

Telephone: 519-253-3000, # 3916
E-mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCH SUBJECT/LEGAL REPRESENTATIVE

I understand the information provided for the study "Emotional Competence in Siblings" as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

_____
Name of Subject

_____ _____
Signature of Subject Date

SIGNATURE OF INVESTIGATOR

In my judgement, the subject is voluntarily and knowingly giving informed consent to participate in this research study.

_____ _____
Signature of Investigator Date

Appendix G

Parent Feedback Form

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Your family participated in a research study conducted by Catharine Lee, from the Department of Psychology at the University of Windsor. At that time, your children were asked to participate in tasks that evaluate language skills and their understanding of emotions. The results of your children's responses on these tasks are outlined below.

Please note: This report is written for parental use only. Although the findings are considered to be a fair estimate of the child's current abilities, caution should be exercised with respect to predicting future functioning or applying the results to contexts other than those in which they were rendered. Interpretation of the results may be altered by information that was not available to the researcher at the time of research participation. Differences observed between children in the same family may result from developmental factors, individual factors, or environmental experiences.

Language Skills. Your children completed a task that evaluated their knowledge of words. Specifically, they were shown pages, with four pictures on each page, and were asked to choose the picture that best matched a particular word. The scores your children achieved are given in percentiles. These are rank-order scores which describe the position of a child's score in relation to the scores of other children of similar age who have taken the test. These scores range from less than 1 to greater than 99. A percentile score of 40, for instance, indicates that the child's score is better than the score obtained by 40 percent of the children his/her age who have taken the test, but also lower than the scores obtained by the remaining 60 percent of the test-takers. The Average range is considered to fall between the 25th and the 74th percentiles. Scores below the 25th percentile may represent areas of weakness compared to most children, while scores above the 75th percentile represent areas of strength.

Your older child participant scored at the 66th percentile, and your younger child participant scored at the 37th percentile on this task.

Understanding of emotions. Your children were shown pictures of a child and were asked questions about the feelings that the child was expressing. Researchers have not yet determined what children normally understand about these questions at different ages. This task evaluated their understanding of emotions in six different areas:

Identification of emotion: Identification of emotion refers to an ability to identify emotions expressed by others. For example "she is feeling sad."

	Has yet to learn	Is learning	Has learned.
Older child		X	
Younger child		X	

Emotional experience: Emotional experience refers to acknowledgement that the child has experienced that emotion. For example "sometimes I'm sad."

	Has yet to learn	Is learning	Has learned.
Older child			X
Younger child		X	

Causes of emotion: Causes of emotion refers to an ability to identify experiences that cause particular emotions, for example "I get sad when I don't get my own way."

	Has yet to learn	Is learning	Has learned.
Older child			X
Younger child			X

Expression of emotion: Expression of emotion refers to indicating the occasions under which emotion is expressed. For example "sometimes I show my mom that I am sad and sometimes I hide it."

	Has yet to learn	Is learning	Has learned.
Older child		X	
Younger child			X

Action responses to emotion: Action responses to emotion refers to an ability to identify what people do in response to emotions. For example "my mom comforts me when I'm sad."

	Has yet to learn	Is learning	Has learned.
Older child		X	
Younger child		X	

Feeling responses to emotion: Feeling responses to emotion refers to an ability to identify how people feel in response to emotions. For example "my mom is sad when I'm sad."

	Has yet to learn	Is learning	Has learned.
Older child	X		
Younger child		X	

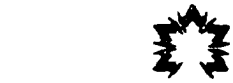
If you have concerns about your child's language development, your child's teacher may be able to provide specific suggestions or recommendations to facilitate your child's development. Alternatively, a Speech-Language Pathologist would be able to provide individualized assessment and recommendations. These professionals are listed in the yellow pages of the telephone book.

If you have concerns about your child's emotional development, services may be accessed through a number of community agencies or private practitioners. For assistance with referral to appropriate community agencies, contact Help Link Access Services (257-5437). Assessment and intervention for children with emotional and behavioural needs is available at Windsor Regional Children's Services (257-5288).

If you have any questions about the information provided in this report, you may contact Catharine Lee at (519) 253-3000, ext. 2217 or clee@uwindsor.ca , or her supervisor Dr. Sylvia Voelker at (519) 253-3000, ext. 2249.

Thank you for participating in this research. You and your family have contributed to what is known about emotional development. When you consented to participate in this study, you were invited to attend two information seminars. After this study is completed, your family will be notified (in the manner previously agreed upon) of the details regarding the information seminars. You may access more information at www.uwindsor.ca/users/c/clee/main.nsf.

Appendix H
Assent Form



Emotional Competence in Siblings Investigator: Catharine Lee

I am a researcher, and I am interested in learning more about what kids in the same family know about feelings. I would like you to look at some pictures of kids, and then I will ask you some questions about what the kid in the picture is feeling, and if you or other people felt that way. Finally, I would like you to look at some pictures and tell me which picture best fits the word I say. I will ask your brother or sister to do the same things. I am also going to ask your mom or dad to answer some questions.

After I am finished talking with families, I will look at all the information from all the families I talk to and I will write a report on what I learned. Other people will read the report, and the information might also be put in a book or magazine, but no-one will know exactly who the kids or parents are that answered my questions.

No-one else will know what you tell, not even your parents, unless you tell me that someone is hurting you. If I think that you are being hurt or abused, then I need to tell your parents or someone else who can help you. Otherwise, I will keep everything that you tell me private.

Your mom and/or dad said it is okay for you to answer my questions. You won't get in any trouble if you don't want to. If you decide to answer my questions, you can stop at any time and you don't have to answer any questions that you don't want to. It's up to you. And you can ask me questions about what we are doing. Whether you answer my questions or not, I'll give you a small prize when we are done.
I understand what I am being asked to do as part of this research study. I agree to be in the study.

_____ _____
Signature Date

_____ _____
Witness Date

VITA AUCTORIS

Catharine Helen Lee was born in 1960 in Hamilton, Ontario. After over twelve years experience developing skills and achieving management status in the retail industry, Catharine resolved to attain a university education. Catharine graduated with a B.A. (Hons.) from McMaster University in 1997. She completed her M.A. in Child Clinical Psychology at the University of Windsor in 1999. Catharine is currently completing her Ph.D. in Child Clinical Psychology at the University of Windsor.